JULY 1956

Approach

Vol. 2

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THE NAVAL AVIATION SAFETY REVIEW

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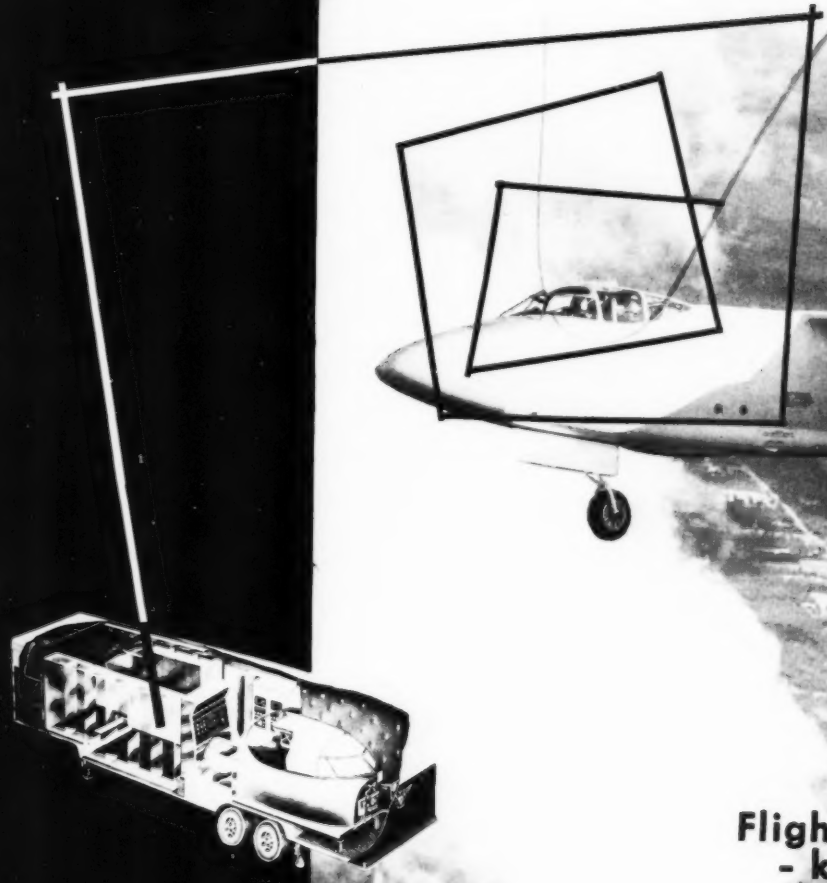

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Flight Simulators - key to safety

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Approach

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Rock an' Roll ..... **page 4**

Will Riskit, the fearless floorboarder, battles for the lead position as he flashes over the choppy water in a thrilling hydro race. His purple and orange job, a man-sized hobby, draws the especial attention of some squadron buddies ashore. They have a water's-edge seat when Riskit learns the hard way about a common denominator between airfoils and hydrofoils in Rock 'N Roll. For the story, check page 4.

FLYING the HOK-1 ..... **page 20**

Test Pilot Bill Murphy tells the story of the new HOK-1. Kaman's new 'copter is called the "syncropter" because of its side-by-side counter-rotating rotors. Bill reports better than usual helicopter stability for the HOK, including some hands-off flying! For the details see page 20. Just one thing—when you first see an HOK, don't rush in from the side to greet the bird as rotor droop on the sides is quite low! Approach from the front where rotor height is greater, and the pilot can see you.

LIVE IT UP! ..... **page 30**

High altitude incidents and accidents continue to occur, emphasizing that high flying, in proper style, requires attention to details of both training and equipment. For an informal progress report on such related subjects as decompression, parachute G forces, helmets, ejections, hypoxia and old oxygen masks, take up a heading for Live It Up, page 30.

P. S. If you're the quiz type, you'll probably have already figured out the altitude shown here, and in the article. The correct figure appears on page 32.

This periodical contains the most accurate information currently available on the subject of aviation accident prevention. Contents should not be construed as regulations, orders or directives unless so stated. Material extracted from Aircraft Accident Reports, OpNav Form 3750–1 and Anymouse (anonymous) Reports may not be construed as incriminating under Art. 31, UCMJ. Names used in accident stories are fictitious unless stated otherwise. Photo Credit: Official Navy or as credited. Original articles may be reprinted with permission. Contributions are welcome as are comments and criticisms. Address correspondence to Director, U. S. Naval Aviation Safety Center, NAS Norfolk 11, Va.

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Tech

Letters to the Editor

Sir:

In regards to your article "Point of No Return" under Anymouse on page 16 of the May 1956 issue. Would like to know how long it took them to move Wright-Patterson from Dayton to Columbus, Ohio. This is quite a remarkable feat.

The last time I was there on visit, I thought it was a permanent installation. Thought the MARINES were the only ones who could accomplish the impossible. Guess the Air Force beat us to it if they actually have moved since the end of this last week.

ROBERT E. WALLMAN
TSgt USMC, Akron

When last heard from, our Anymouse editor was flying his own plane cross-country to Portland, Oregon. We're hoping he hasn't moved Portland.—Ed.

Sir:

. . . May I congratulate you on *Approach*. Here at the Armed Forces Staff College, this publication has the acclaim of many of the USAF aviators as well as the Naval aviators.

Your outstanding article "Time Zero" in the May issue brings forth this correspondence. My message is brief and has only this to say:

"WHAT HAS HAPPENED TO THE TIME-HONORED PLANE CAPTAIN OR CREW CHIEF?"

Can we continue to pay a million or more dollars for a piece of equipment and have *no particular individual* responsible for it? I think not! And if men are so scarce, it occurs to me that we had better make one man *responsible* for more than one piece of such valuable equipment — and make certain that he is responsible! In my humble opinion this business of any old mech preflighting any old aircraft has got to go — be it in a Regular Navy Squadron or a Reserve Navy Squadron. Valuable *lives* as well as valuable *equipment* are involved.

— I. J. SCHWARTZ,
CAPT, USN

Agreed. Individual responsibility is one key to greater aviation safety. Most units do assign plane captains or crew chiefs, but perhaps the answer can be found in not merely designating an individual as a plane captain, but in generating him with the full understanding of the importance and responsibility of his job. Remind him that although his airplane requires the attention of many specialists the airplane is still his.

More than any one person, the plane captain is truly the man behind the man behind throttle. When he is convinced that he is the real difference between Availability and AAR's, and may expect to be properly rewarded therefore, then we will have an adequate answer to your question. Realizing this, at least one outfit (VA-86), has approached the problem with a Plane Captain's Handbook. It is designed to keep the Plane Captain abreast of developments within his model aircraft and stresses the importance of his responsibilities.

Anyone care to add their comment and ideas? Ed.

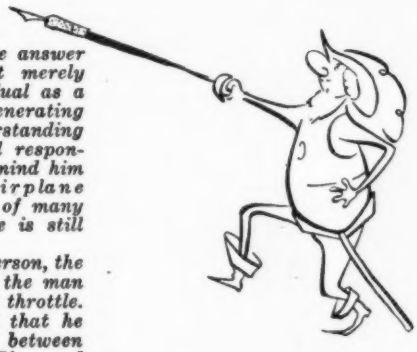
Sir:

On the subject of clearing pilots to make instrument approaches when the field weather is below the minimums for the type of approach contemplated:

The local practice at this Alaskan base is to clear pilots for a GCA approach no matter what the ceiling and visibility at the time of commencing the approach.

Very often the field is intermittently VFR — then zero-zero with frequent snow showers moving across the field. If a pilot happens to reach GCA minimums during one of the snow showers he will have to pull up and make another approach. At other times the observed weather from the control tower and the operations duty office will be zero to one-sixteenth mile while the approach end of the runway will be clear.

I know that many pilots approaching here are not visual at GCA minimums but continue their approach. This is confirmed by the fact that the GCA outside observer approximately 50 yards off the end of the runway has not reported the aircraft in visual contact at GCA minimums. It is a well known fact that the outside observer



sees the aircraft *before* the pilot sees the runway through a windshield covered with ice, snow or moisture from rain or fog. When the pilots are questioned after landing they *always* say they were visual at GCA minimums, and who can argue with their integrity? Later at the bar the same pilots will tell a story nearer the truth.

In the interests of saving lives and aircraft, I wholeheartedly recommend that a forthcoming instruction be issued to not permit approaches anytime the conditions at the *approach end* of the instrument runway fall below minimums.

Exception should be made for intermittent conditions such as snow showers. Of course this will be a hardship on the conscientious aviator who does not descend below minimums and might succeed on the next try, but it will stop the foolhardy throttle jockeys . . .

When conditions raise to minimums, succeeding aircraft arriving over the holding fix should not be required to delay their approaches for those already holding, and who arrived during the period when the weather was below minimums. If the holding aircraft cannot be worked in, they should be required to proceed to their alternate. (AFR 60-16 required USAF base commanders to direct all aircraft to their alternate immediately when arriving over an approach fix when the destination weather is below minimums).

— LT, NAVSTA ADAK

Who's next? — Ed.

Safety Council Notes

Excerpts from some of the Navy's 88 Safety Councils throughout the world, who provide local leadership and emphasis to the naval aviation safety program.

High Density Areas—Pilots should be cautioned to avoid flight at even 1000-foot altitudes during periods of VFR flight, to reduce the hazards of collision in the congested Jacksonville area.—*ComFAirJax* (*NAS Council Southern*)

Confused Taxi and Runway Lights—An experienced pilot landed at night between an 8000-foot runway and a lighted taxi strip that paralleled the runway. The white lights of the runway and the blue lights of the taxiway were of approximately the same intensity. Action has been taken to maintain the rheostatically controlled runway lights on bright for night operations to provide a difference in intensity as well as color between the runway and taxiway.—*MAG 31*

AD Speed Brakes—Due to an accidental landing on the speed brake of an AD during FCLP the Pilot-Caused Accident Committee found several cases where speed brakes had been disconnected to avoid similar accidents. This practice should be discontinued. However, during FCLP the circuit breaker may be used to prevent inadvertent lowering of the speed brake. —*MAG 31, Miami*

Runway Mobile Control Unit—The absence of aircraft landing accidents, since the establishment of the Runway Mobile Control Unit, was noted. However, even greater benefits could be realized by unit commanders and operations officers, if officers standing the Mobile Control duty would exercise more care in filling out landing logs. The benefits available are in direct proportion to the accuracy and completeness of the information.—*2nd MAW.*

Aircraft Logbook Entries Following Accident—A copy of each AAR is to be sent to the aircraft's logbook when it is involved in an accident so that the proper entries can be made in the logbook.—*CNABaTra*

Arleigh Burke
Chief of Naval Operations

The progress of naval aviation safety has been marked by a steady and encouraging decrease in the major aircraft accident rate. In 1955 for example, that rate was 3.5 accidents per 10,000 flight hours, the lowest in the history of naval aviation. The goal for 1956 is a rate of 3.0.

These deceptively simple figures have not been obtained through directive, nor sustained by mere enthusiasm. Such accomplishment represents a major effort on the part of *all* the many commands, activities and individuals who contribute to a safe and effective naval air arm.

To provide appropriate recognition of specific units which have achieved particularly outstanding aviation safety records, the CNO Safety Awards are presented each year to the squadrons and ships having carried out their missions with the highest degree of safety. When expressed in terms of lives saved and aircraft damage averted, the tremendous value of this effort becomes obvious.

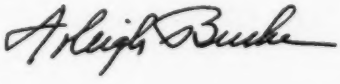
It is equally true that such an effort becomes increasingly difficult as the ultimate goal is approached. We all recognize that it is harder to reduce the accident rate from 3.5 to 3.0 than it was to effect the earlier reductions. For this reason, we must avoid any tendency to relax our efforts because of past progress.

For those of you who are charged with the responsibility for an even safer naval aviation, and you represent every echelon of command from the planning staffs to the plane captains, the task ahead is clear.

A new goal, a new effort is required to improve naval aviation safety even more, and to this end the annual CNO Safety Awards form a positive stimulus.

This month marks the start of competition for the fiscal 1957 CNO Aviation Safety Awards. Each competing unit is starting with a clean slate and a chance to win the Navy's highest recognition for aviation safety—one of the 16 CNO awards planned for the coming year.

Most important to all of us, however, is the realization that in this competition *everybody wins.*



. . . the airborne hull snap-rolled a dozen feet above the surface and man and machine were separated.

"Man, what a way to spend your flight pay!"

The pungent odor of methanol fuel drifted along the shoreline where a trio of sports-shirted aviators craned their necks toward the plumes of spray marking the approach of a group of racing hydros. Battling for position the small, thin-shelled boats bobbed and skittered madly in the choppy water, their drivers hunched over in the tiny cockpits.

"Yeah," exclaimed a tall, thin ensign, "ol' Will Riskit sure picked himself a man-sized hobby this time!"

Beside him, a stolid lieutenant squinted at the racing

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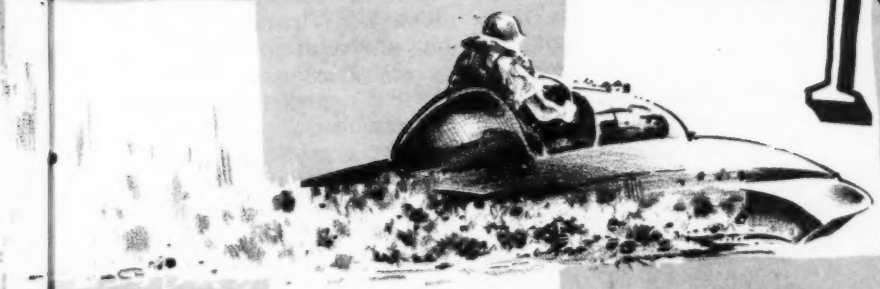
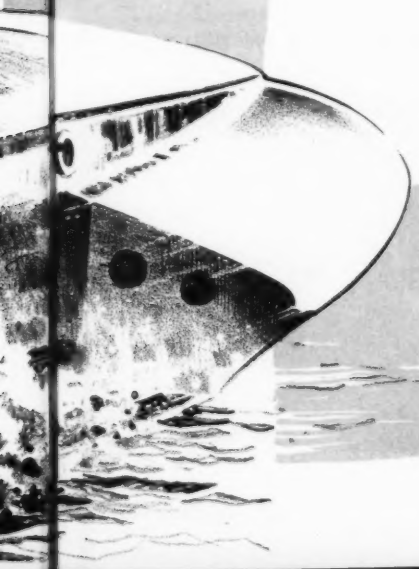
ROCK 'N ROLL





Rock 'n Roll

Continued

boats with some concern. "Hold on to your beanies, gents, here they come!"

In a squawling chorus that rivaled the roar of a J-48 at full bore the shallow-hulled hydros streaked by the crowd and, still jockeying for position, headed into the turn.

"Hey, there's Riskit's boat!" shouted the third aviator, a short stocky ensign. "That purple and orange job in the number two spot!"

As the lead hydro slacked off for the buoy, Riskit made his bid to take the lead. Grim jawed, he maintained his RPM and whipped behind the boat ahead, attempting to widen out and pass on the outside.

Entering the churning wake of the lead boat, Riskit's little craft snapped clear of the water, its bow arcing high into the air, and even as Riskit moved to close the throttle, the slight crosswind took its effect. The airborne hull snap-rolled a dozen feet above the surface, and as the onlooking crowd gasped, man and machine were separated.

Riskit and boat disappeared in twin blossoms of spray. Seconds later he popped to the surface, shook off his helmet and began flailing away. The crowd was still digesting his acrobatic performance when the rescue boat fished him out.

"Stand by to repel boarders," warned the lieutenant, "our hero is sloshing this way, brim full of salt water and excuses."

"Didya see that #&*@ foul me?" sputtered Riskit as he climbed up the pier ramp.

"Foul?" snorted the lieutenant, "I don't know anything about boat racing but it looked to me like you asked for it . . ."

"Whataya mean, asked for it? Why, I coulda . . ."

"Hold it up Will," interrupted the lieutenant. "Let's talk about it after you get your salvage operations squared away."

Later, at the clubhouse and in dry clothes, Riskit chewed moodily on the olive from his martini, ignoring his three companions. "Blasted luck," he mumbled, "my mill was just beginning to roll out top rpm's when . . ."

"Now look Will," broke in the lieutenant, "we sympathize with you and all that but—remember when McClobber creamed that Cougar? He was following another Dash Six in on final. Mac got too close and was slapped into a vertical bank from turbulence that dropped him in for a strike.

"Well, a boat's wake is like that. You know what happened to you today. Everything was going fine until—wham! The rug's out from under you."

The ensigns grinned, and Riskit frowned. He beckoned to a waiter for another round. "Long as I'm sitting here," he grumbled, "I might as well make it as painless as possible . . ."

"Let me give you a better idea of turbulence created by aircraft," resumed the lieutenant. "The Beech people out at Wichita published some pilot reports on turbulence behind airplanes. Here's some I remember:

"On a cold night an outbound R4D had just cleared the boundary when an SNB crossed the fence for a landing. The SNB went into a violent snaproll and the wingtip just cleared the runway by inches.

"Then there was the R4D which took off behind an air-

line Connie. It took both pilots on the controls to keep the R4D from doing a snaproll.

"The B-17 can be considered to be a medium-sized airplane but a Fortress with 100 feet of altitude got thrown into a near vertical bank while following about a mile behind another B-17.

"You can see that the size and weight of an airplane is no guarantee against the effects of turbulence, especially when you're landing or taking off and your airspeed is low . . ."

"This turbulence has something to do with wingtip vortices, doesn't it?" asked the tall ensign.

"Right you are m'lad. Whether you call it propwash, wake turbulence or slipstream it's still a wingtip vortice and, it's the prime producer of man-made turbulence."

"In effect your airplane creates a horizontal tornado at each wingtip as it moves through the air."

Riskit, who had been visually tracking the retreating form of a shapely brunette who moved out the door, sighed feelingly. "Some vortices on that," he breathed reverently as he turned back to the group, "now that's the kind of turbulence I'd like to . . ."

The lieutenant eyed him resignedly.

"Okay, here's one for you," challenged Riskit, "remember those rat races we had in the training command when the duty runway began to look like Constitution Avenue at quitting time? How come more guys didn't end up with bent birds because of wingtip vortices?"

"Well Will, the strength of a wingtip vortice is linked to the span loading of the aircraft. That's an engineer's way of saying ratio of weight to wing span. The greater the span loading the greater the initial strength of wingtip vortices.

"The Jays and those Stearman yellow perils have a relatively light span loading so you had less turbulence," the lieutenant reflected a moment then went on. "I remember reading about a pilot who put a Beech behind a jet bomber which had flaps and gear down and was carrying a fairly high percentage of thrust. Seems to me he used the words 'violently uncontrollable' at one mile behind the bomber. *That's* turbulence!

"Incidentally, it's estimated that turbulence from the wing involves as much as ten times as much momentum as the engine wake on a B-47 at 175 knots."

"If I'm behind a transport or other big jobs, I always wait until he turns off the runway," spoke up the thin ensign.

"Good, but sometimes not good enough."

"How come?"

"There's a situation which you might call 'turbulence per-

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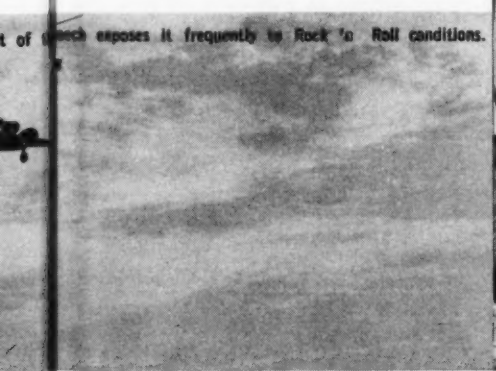
When following an aircraft like the R7V on a calm day, lengthen your landing interval or stay above his flight path if possible.



t of ech exposes it frequently to Rock 'n Roll conditions. . .

Rock 'n Roll

Continued

sistence' to consider. Calm or light winds increase the duration of turbulence. Cool air, especially in the evenings or at night, resists vertical movement and thus intensifies the hanging effect of turbulence on the runway or final approach zone.

"For example, during a calm condition an SNB got caught in turbulence two miles behind a landing P2V. The Beech had gear and flaps down and was at 90 knots. At 500 feet the plane went into a steep roll to the right. The pilot recovered at 300 feet and found himself in a second and more violent roll. He slammed into the ground and sheared one main gear."

"Well, how do you avoid turbulence?" queried the other ensign. "The stuff is invisible and you can't forecast it . . ."

"There aren't any detailed rules for avoiding it completely," replied the lieutenant. "One thing you can do is recognize the conditions which produce it in upsetting quantities, then use these simple precautions.

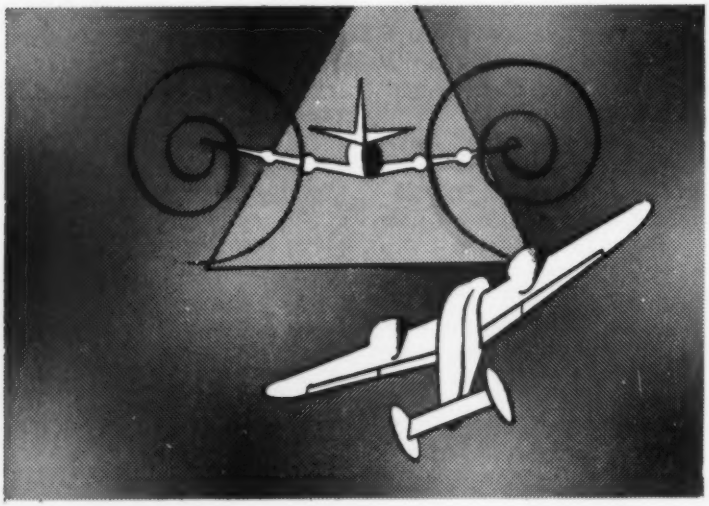
"Vary your landing or takeoff interval to meet the factors of traffic you're following and the atmospheric conditions. Cool, calm weather and a heavy airplane ahead of you should be warning enough to lengthen the interval. If you don't have enough interval, an early waveoff is your best maneuver."

"Never use them myself," growled Riskit draining the last of his drink, "a waste of taxpayers' money. Besides I never have enough juice to go around."

The lieutenant glanced at Riskit then shook his head sadly. "If you're following a large aircraft," he resumed, "another way to avoid turbulence is to stay above the flight path taken by the heavy plane. Shoot for touchdown well forward of his contact spot, if sufficient runway remains. If not, go around.

"In other words, if an R6D touches down on the threshold and you are in an SNB, don't follow his example. Put your airplane on deck well ahead of the spot at which he touched down.

"Here's one you probably know about. If there's a crosswind the best deal is to line up on the upwind side of the runway as the turbulence will drift to the downward side.



Aircraft employing Fowler flaps, like the Connie, are believed to have a strong flap vortice which increases the intensity of the wingtip vortices.

On a calm day, a Beech, which was 2 miles behind a landing P2V, dropped in short . . .

"Now what did I do to deserve that," wailed Riskit, "all that slipstream and propwash . . . Blasted luck! I should'a known better than to sit down at the same table with the squadron safety officer!" ●

On takeoff crab into the upwind side as soon as possible."

Riskit snapped his fingers and his face broke into a pleasant expression. "Crab! That reminds me. I'm hungry. How about a seafood plate? They're on special here today."

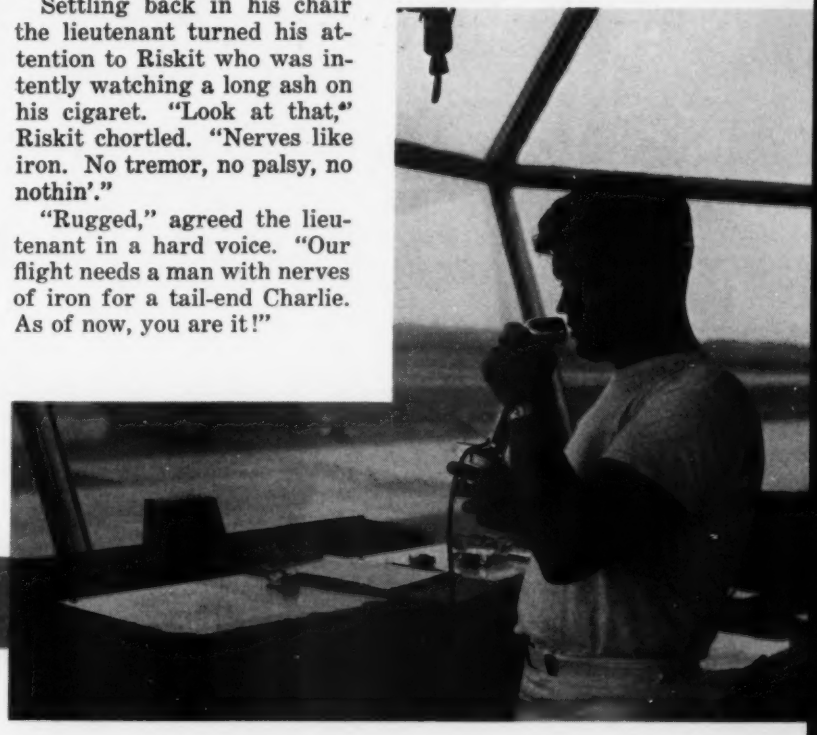
A harassed note crept into the lieutenant's voice. "In calm conditions, if traffic had just departed or landed, you might request a runway other than the duty runway for a landing.

"You know," he continued, "it might be a good idea to brief all tower personnel on the effects of wake turbulence —they'd better understand a pilot's request for a delay in takeoff or landing."

Settling back in his chair the lieutenant turned his attention to Riskit who was intently watching a long ash on his cigaret. "Look at that," Riskit chortled. "Nerves like iron. No tremor, no palsy, no nothin'."

"Rugged," agreed the lieutenant in a hard voice. "Our flight needs a man with nerves of iron for a tail-end Charlie. As of now, you are it!"

"Might be a good idea to brief tower personnel on the effects of turbulence . . ."



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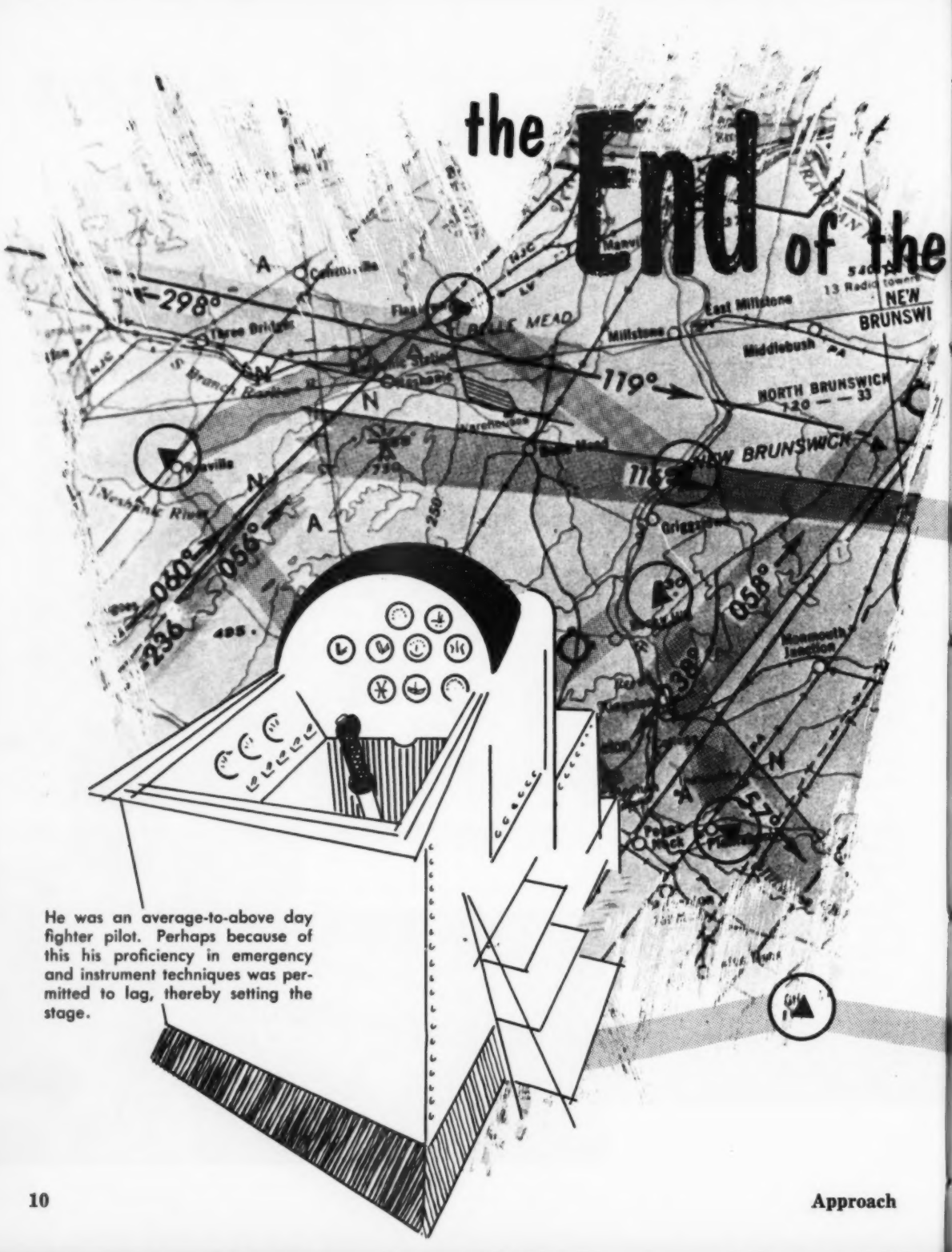

He was an average-to-above day fighter pilot. Perhaps because of this his proficiency in emergency and instrument techniques was permitted to lag, thereby setting the stage.

Story

By LT Charles Holm

A naval aviator since 1946, Lt. Charles F. Holm is presently operational flight trainer utilization officer at the U. S. Naval Training Device Center, Port Washington, N. Y., where his varied prop and jet fighter experience comes in handy. Chuck's tours include LSO and Safety Officer assignments, with such units as VX-3, VA-15, CVG-4 and VF-44.

The GCA controller frowned in concern as he watched the progress of the target blip that crawled slowly across his PPI scope. Leaning closer to his mike he spoke precisely, encouragingly, to the pilot of the airplane on the base leg of his second approach to the mist-shrouded field.

In the controller's voice there appeared no hint of the worry which drew his face into strained lines. With an almost gentle firmness he led the pilot along the prescribed track, sensing in the uncertain blip movements the growing anxiety of the pilot.

Then, as abruptly as though cut off by a switch, the earphones were empty of the sound of the pilot's acknowledging transmissions; the scope was empty of any target. Urgently the controller called the aircraft number, but the earphones remained silent; the glowing face of the scope remained vacant. All sight and sound of the airplane had been erased. The controller's hand moved swiftly to the crash phone.

When, finally, he had completed his report, giving the information required by the crash party, the controller replaced the crash phone. Cursing softly, with infinite feeling, he glared over his shoulder at the semi-dark circle of

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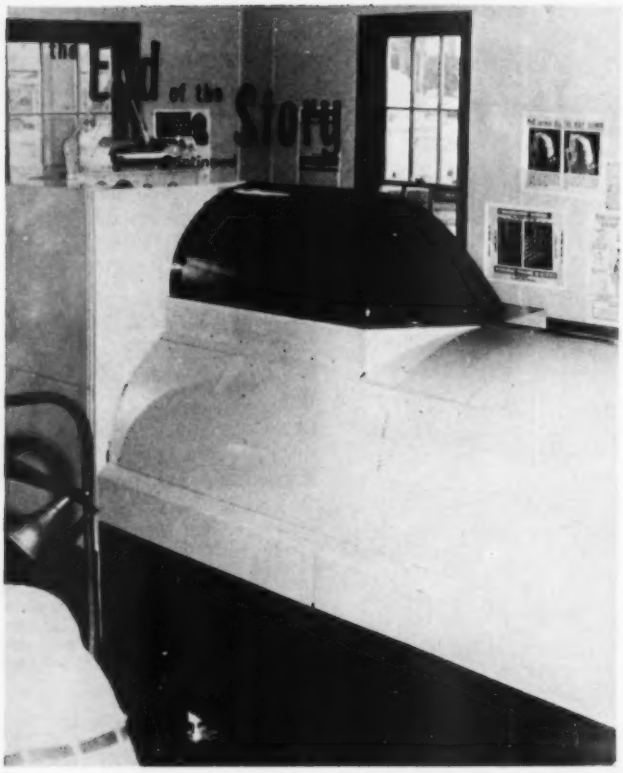


account of an otherwise good pilot who has permitted his razor-sharp reactions and procedure to become dangerously dulled and uncertain from lack of *consistent* training.

That's the magic word — "consistency" and in a business where training-developed precision pays off in happy endings, consistency is the aviator's most saving virtue.

Today's "champagne limit" instrument check-pilot may easily allow his immediate excellence of precision and his confidence of ability to become a ragged plumber-type effort because of a few months neglect in training. In brief, the old saw "practice makes perfect" was tailormade to fit

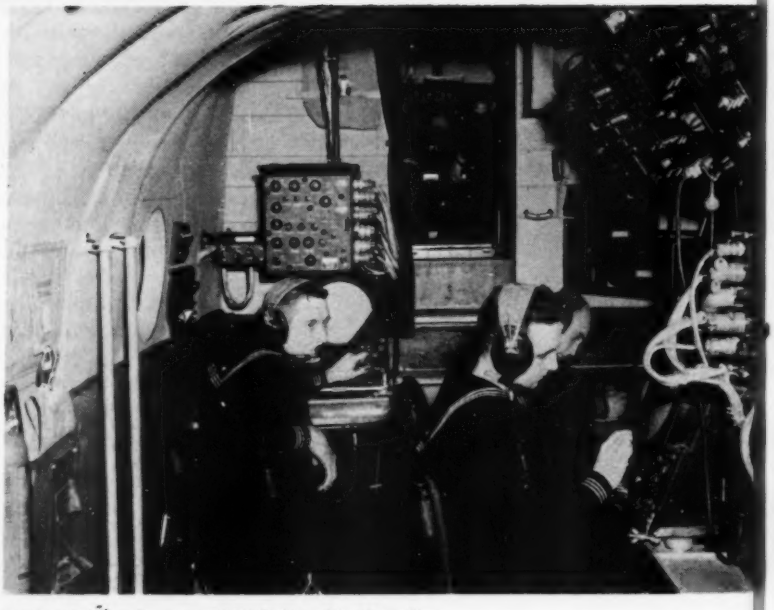
Whether it be a jet instrument trainer as here, or a realistic flight simulator trainer, when you close that canopy, "you are there"—flying anywhere you wish, practicing any emergency procedure or letdown desired to improve your techniques and proficiency.

blankness that was the radar scope.

"I almost got him down, rough flying and all, but he just couldn't do it . . ." His frown deepened.

"What," he asked of no one in particular, "was he doing up there in that stuff?"

This fictitious account of a situation, which is based upon uncomfortably repetitious fact, has no cheerful ending. It was so intended. There is nothing cheerful or encouraging about an unfortunate pilot who discovers, belatedly, that he is in a situation beyond his ability to solve. There is little comfort to be drawn from the



Realism is design keynote of P5M flight and tactics trainer.

naval aviation, and we'd like to tell you about the perfect practice which will let you write your own happy endings, into-the-sunset-style, to every flight.

Here's our proposition.

It's pretty obvious that the pilot of our story didn't react quickly and surely in a chips-down situation, very probably because he hadn't practiced in a long while. Recall any similar situations?

Everything but Flight Pay is provided by the careful detail of twin engine instrument trainer.

Well, the ironic part about this sort of thing is that there are a number of ingenious training devices which simulate both your aircraft and most any condition you care to experience. They're nice, forgiving devices which will let you butcher up an approach or a procedure *without* imposing a nasty penalty for error.

Properly used they can make you letter-perfect in the fundamentals of normal and emergency procedures, which you can then apply to actual inflight training. That means that you're then relieved of a large measure of the painful step-by-step struggle to accomplish proper procedure *and* fly the airplane properly. You can then devote a larger portion of your thinking processes to the business of flying precisely and planning ahead. Figure?

There are two types of flight simulators now generally available to naval aviators: the generalized instrument trainers for single-engine props, multi-engine props, and single-engine jets; and mobile operational flight trainers which simulate a particular type aircraft.

So far there have been 28 carrier model and 11 patrol model operational flight trainers developed and delivered to fleet air activities under the cognizance of the Special Devices Center, Office of Naval Research, Port Washington, New York.

Oddly enough, the mobile operational flight trainers, which should be most attractive to pilots, aren't being used to the extent possible, not by a dang sight.

In 1954, an average of 23 of the trainers sat idle 37 percent of the available time — this despite numerous directives encouraging their use.

The picture improved a little in 1955 when only 32 percent lost time was recorded. And it's real interesting to speculate on the possible effect of this lost time applied to the faulty procedure-caused accident rate of that year.

This avoidance or ignorance of the potential benefit of the trainers is explained in a large part by the standard pilot reaction to any proposal for increased usage—by *him*. The complaints go like this:

"The danged things don't fly like airplanes." Um, hum. But remember, Wilbur, these trainers are dubbed flight *simulators*, not flight *duplicators*. Also, Orville, bear in mind that even individual aircraft vary in performance—(if you don't believe it, fly the skip-

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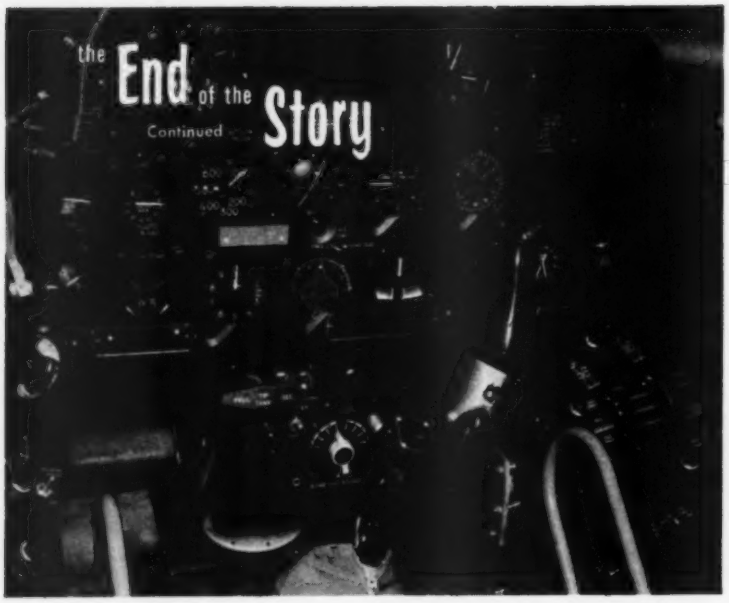
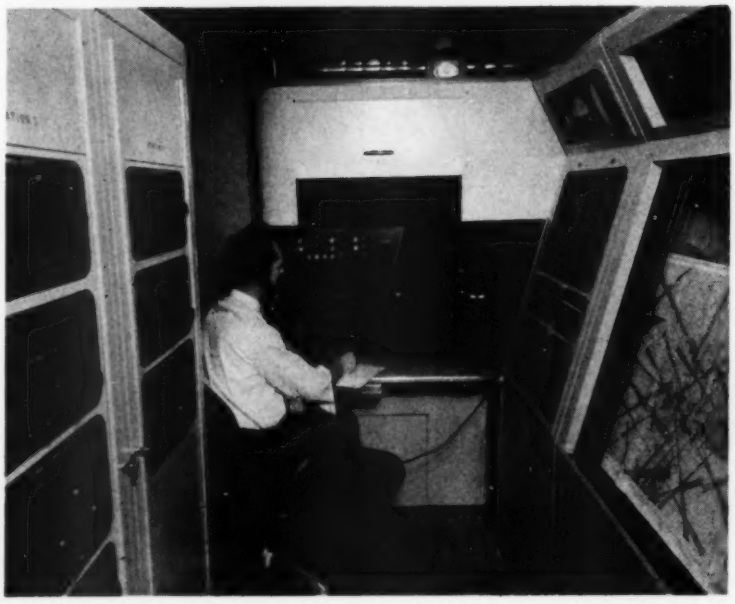


F2H-2 Operational Flight Trainer Cockpit offers exact duplication of standard equipment.

in the aircraft." Oh, come now, gents, doesn't that sound just a little bit like a famous final phrase in the making? So you're perfectly capable of tooling your airplane through the usual syllabus - routine flights, but why wait to learn of emergency procedures until you have an instrument fire in your lap, or just plain lose an engine? Why not learn the easy way? When the real emergency comes you're still gonna sweat, sure, but just to have some smooth-working reactions ready to go to work . . . Now that would be mighty helpful.

"The instructors aren't checked out enough." Ever heard that one? Ever said it? Put another way: would you be bold enough to say flatly that *you're* completely checked out?

Man Behind the Scene—Here, the instructor at his F2H control panel station observes pilot reactions to problem situations. For kicks, have a pilot friend throw in some whoppers.



per's plane!) And in defense of the trainer, there's considerable evidence that pilots are somewhat varying in their opinions, with some marvelously contradictory reports being made by individual pilots of the same machine!

Realism factors have been added constantly to the trainers, with buffet, lightning, cloud simulation, oxygen and G-suit provision now incorporated on many models. Just for kicks, climb into a trainer, not to pinpoint its deficiencies, but to see how much you can get the machine to do for you and you probably will be pleasantly surprised.

"The trainer arrived too late; I'm already checked out

Because there're all kinds of instructors, just as there are all kinds of pilots, don't expect your instructor to display the best qualities of a Test Pilot Training grad and CAA administrator. If you're dissatisfied with a trainer operator, how's for making it a cooperative period of instruction?

Another fine procedure is to get another pilot to monitor the problem, and to throw in any realistic variations which may be appropriate.

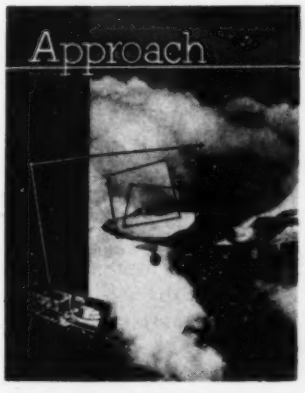
"I don't have the time." Now, *that* one we just can't buy. Granting that between flight operations and collateral paper work chores, the pilot is well occupied, there still remains a considerable amount of time available for such things as learning how to grow old gracefully in an airplane. With due respect for assigned duties, we all know that the time factor can't be used as a valid argument against simulated trainer scheduling.

Oh, and one other thing; never begrudge yourself the time spent in the simulated flight and instrument trainers, because to learn through actual flight experience only can be an expensive school—and you may not last for the full course.

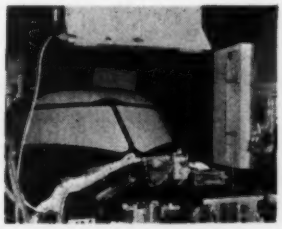
The faithful Link—in jet garb as the C11B(Training Device 2F-23)—provides good experience, much like the squadron TV instrument ship. Then too, prop drivers attending courses like JTTU have found the trainer another aid to their jet fam work.

Begin now to learn how to write your own endings to your flight experiences — and guarantee that they all end up with something like "flight was completed without incident . . ." ●

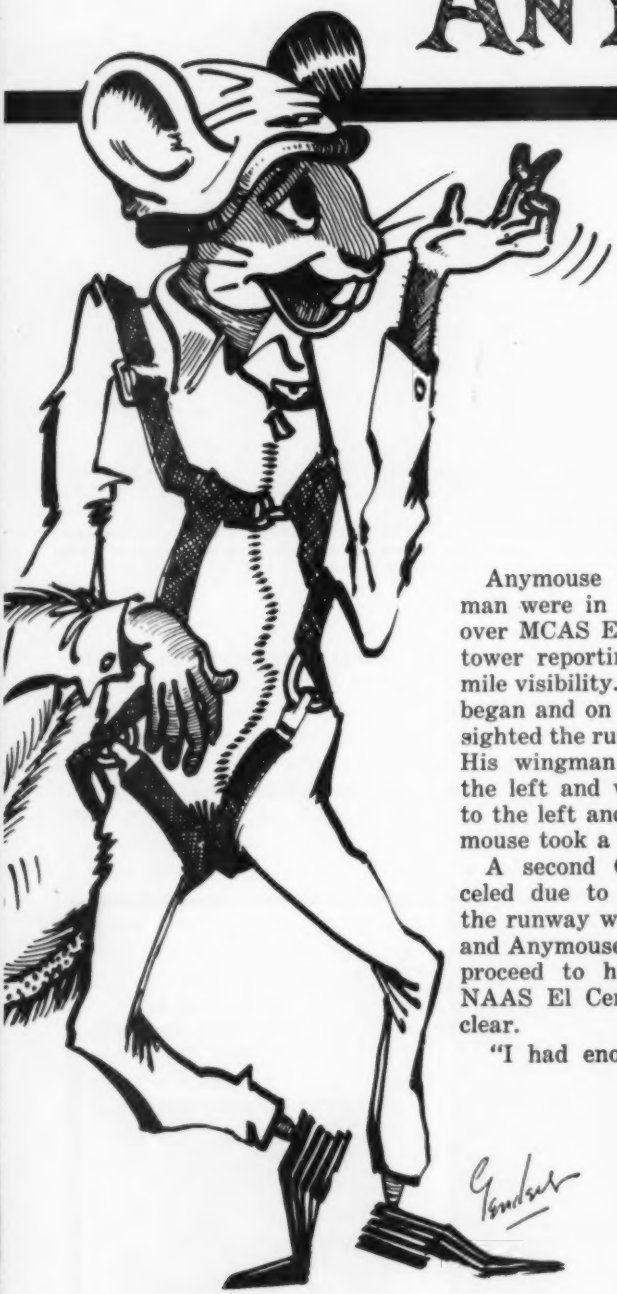
ON THE COVER



Photographer and artist combine talents to portray the realism which proper use of operational and instrument trainers provide the professional aviator. Actual trainer shown is the A3D flight simulator, also pictured at the right. Located at NAS Jax, it is the only A3D mobile trainer now available in the Navy. Its recent arrival there was something of a first—being the first time a trainer reached the Fleet before the aircraft it simulates. The A3D simulator has both duty and dollar value, costing about as much as the A3D aircraft itself. For more on special devices, including what devices are available and how to get them, see the Special Devices Guide, NavExos P-530-2. Units with outstanding utilization programs are invited to submit reports, including photos, for possible use in *Approach* and the *Aviation Safety Officer's Guide*.



ANYMOUSE and



NIGHT FLAMEOUT

Anymouse and his wingman were in a pair of F9Fs over MCAS El Toro with the tower reporting fog and one mile visibility. A section GCA began and on final Anymouse sighted the runway to his left. His wingman was flying on the left and was able to jog to the left and land but Anymouse took a waveoff.

A second GCA was canceled due to an aircraft on the runway with a blown tire and Anymouse was advised to proceed to his alternate at NAAS El Centro which was clear.

"I had enough fuel," said Anymouse, "but I knew it would be close."

He decided to set up a flameout pattern over El Centro and tried to contact the base when halfway there. El Centro didn't answer but Anderson GCI gave his position and a steer to El Centro. March AFB called and advised Anymouse that El Centro was open and that the tower there was receiving him.

"At 30,000 feet the engine flamed out," continued Anymouse, "and I began to descend. I couldn't spot the field at El Centro but Anderson GCI informed me that I was four miles west of the field.

"At 18,000 feet I spotted the field lights off to my left and I was over the runway at 12,000 feet. I made a port orbit, hit the high key with gear and flaps down at 8000 and executed a normal flameout pattern.

"On final I appeared to be a little high so I nosed over and was over the end of the runway with 190 knots. I touched down about one-third of the way down the runway and began normal braking action. I barely had enough speed to turn off at the end of the runway."

It worked out fine — this time!—Ed.

his hairy tales

Anymouse reports are submitted by Naval and Marine Corps aviation personnel who have had hairy or unsafe flight experiences. As the name indicates these reports need not be signed. The purpose of Anymouse Reports is to help prevent or overcome dangerous situations. Forms for writing Anymouse Reports are available in ready rooms and line shacks. All reports are considered for appropriate action. Send reports to the Naval Aviation Safety Center, NAS, Norfolk 11, Va.

ADRIFT IN THE SOUP

Anymouse and his wingman flying ADs departed late one afternoon on a low-level VFR flight to Dallas. It was dark by the time they reached El Paso and they were having difficulty avoiding scattered thunderstorms. They held a conference on the radio on whether to file IFR, land at El Paso or continue on to Dallas.

"Expecting to meet some friends in Dallas and being real 'tigers,'" said Anymouse boldly, "we elected to continue our low-level."

Fifteen minutes past El Paso the mountains forced Anymouse and his wingman to 7000 feet. Even though it was night they didn't use oxygen.

Then Anymouse began to tire. Suddenly he saw the moon through a break in the overcast and decided this would be a good time to knock off the night low-level and climb on top. He added power and pulled up into the soup.

At 15,000 feet he was still in the soup.

Instrument flying required all his attention and Anymouse was unable to plug in his oxygen mask.

His wingman lost sight of him and executed a foul weather deployment. The wingman arrived safely at Dallas. In his rush to get on top so he could plug in his oxygen, Anymouse was climbing at 100 knots.

At 18,000 feet Anymouse was still in the soup and becoming discouraged. He decided to make a 180-degree turn and let down until clear of the thunderstorm. Starting a shallow descending turn, a red light suddenly lit up the cockpit—fuel pressure dropping!

Just as Anymouse grabbed for the fuel selector the AD stalled and began spinning. He recovered, but in his haste to pull out he got into a progressive stall. At 10,000 feet the aircraft was completely out of control. Everything was either tumbled, winding up or unwinding.

"I let go of everything" Anymouse said, "and numbly waited for the crash."

"The next instant the turn needle indicated wings level and I cautiously pulled out at 6000 feet. Mountain tops in this area are 7000. Climbing to 7500 feet I broke into the clear and headed back for El Paso, pooped and limp.

"I've been in trouble before, trying to fly VFR in marginal weather. I figured I could get by with it this time. But I was wrong. This was the cure for me.

"Even after I had landed at El Paso the impact of what a close call I'd had didn't hit me. About one o'clock in the morning I suddenly woke up trembling and in a cold sweat."

As one real hopped boy might say to another—you had a "cold turkey cure!"—Ed.

LOST HORIZON

Anymouse and wingman finished an hour of two-plane section tactics in ADs and, finding life too tame at 8000 feet, dropped down to 3500 feet, 500 feet above the overcast.

The two pilots engaged in a tail chase and at the top of a column wingover, Anymouse got his thrill.

"I fell into the leader's slipstream," he said, "and was thrown ungraciously into the overcast in an inverted attitude.

"Not being thoroughly familiar with the non-tumble gyro horizon, I elected to pull the plane through in a split S recovery. This was successful, recovery was made 500 feet above the ground, which in this case was a narrow valley in the coastal range. Mountains extended sharply upwards on either side into the overcast."

Anymouse checked the area on a subsequent flight and reported that his "valley" was nothing more than a canyon and was the only one in the area that paralleled his recovery heading.

Anymouse continued next page

ANYMOUSE

(Continued)

TOO POOPED TO–

"I had taken off from Cherry Point at 1800 for a westward cross-country in an F3D and it was 0300 when I entered the pattern at Phoenix Sky Harbor for a landing. Weather was cavu and I was making a right-hand approach to runway 8.

"A right-hand approach can be diffcult in an F3D and it can be downright hazardous when the pilot is tired, as was my case. Name all the things that can be wrong with an approach and you have what was wrong with mine. I waved off and got permission to re-enter downwind.

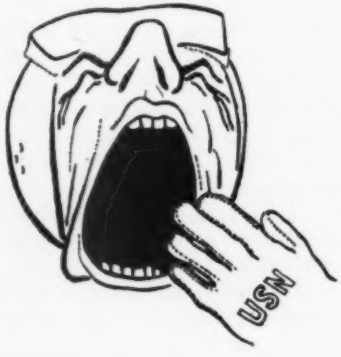
"I had been in Sky Harbor before, in daylight, and I knew a 2700-foot mountain lay 5 miles to the south of the field. However, I had been unable to find this mountain on the jet letdown plate and I then made a dangerous assumption. I assumed the mountain would present no problem, otherwise the chart would show it.

"I rolled into a turn to enter downwind and figured the angle of bank would take me clear of the mountain. I soon saw the mountain clearly; as a matter of fact I hope I never see another mountain that clearly at night. I stood as much chance of clearing it as Cuba stands of seeing a 12-inch snow. Add slow reaction to that!

"My guardian angel must have been along because by standing the plane on its left wing I missed the mountain. At the same time I began climbing, also making not-too-mild comments about the people that draw letdown charts.

"My second approach was better and I landed alright. As soon as my flight plan was closed I hauled out the letdown plate for another look. Imagine my surprise when I saw the mountain on the chart right where it should be. Complete with the correct altitude too!

"Well I learned pilot fatigue is apt to kill you as



quickly as Russian roulette. The next time I go somewhere I'm going to be checking altitudes on that chart like they were deductions from my income tax."

Amen—Anybody, but anybody can be a fatigue casualty. Did you see a flight surgeon's tips in "Too Pooped to Pop" April Approach*?—Ed.*

LIGHTS, ACTION, CUT!

"We had the night platform set up for FCLP on the left runway. This night the radio extension to the LSO was out and the platform lights went out as soon as the duty section left. I was the only LSO on the runway. We had a tower duty officer even though the instructions didn't require one. We received permission to commence NFCLP with the platform lights out.

About this time an SNB was cleared to take off on the right runway; started his takeoff on the left runway, saw an S2F in its approach and aborted. I didn't see the SNB and waved the S2F on in and cut him. Just as the S2F added power to takeoff—SWOOSH—an SNB right wing went whistling by my head. No bad results, just a scare. SNB was on VHF and LSO radio cart on UHF. SNB pilots called and apologized the next day.

"I recommend that: (a) the NFCLP platform used by VC squadrons at NAS Atlantic City be used by everyone; [consists of] flashlights in metal holders, (b) that runway lights be out for NFCLP and that flarepots be put out past the FCLP platform for aid in takeoff after the cut, (c) the radio cart in use at Atlantic City be made standard, (d) that at least two LSOs or experienced pilots be on the runway for NFCLP, and (e) that FCLP and tower be on the same frequency . . .

MY ACHIN' - -

Overheard in a readyroom, and forwarded without comment, "I had to go through St. Louis because it was the only map I had."

HEADMOUSE

Sir:

It is recommended that on S2F and TF model aircraft, the pilot's and the copilot's escape hatches be made of plexiglas or some other suitable transparent material instead of metal. This would increase the visibility considerably.

It would be a definite aid in the landing approach for pilots making right-hand approaches and copilots making left-hand approaches.

Operations Officer
FASRON

Your recommendation was forwarded to BUAER for consideration. Anyone else care to comment on this subject? — Ed.

Sir:

This squadron has been utilizing aircraft equipped with the automatic seat belt (TV-2) for a number of months and there has been some concern among the pilots regarding the safety of the installation to the extent that they have considered disconnecting the automatic feature.

The reasoning behind this thinking probably stems from a lack of recent information, however, it is a general belief that an ejection at high altitude and high speed in which the seat belt is unfastened during ejection the following may result:

(a) The parachute may tear open due to windblast causing high G-forces on the opening shock, and a long cold parachute approach sans oxygen.

(b) High deceleration forces caused by a small mass being subjected to high velocities without the stabilizing effect of a rigid supporting seat.

An article, or reference material which would dispel or affirm the probability or such occurrences would certainly be appreciated.

— Anymouse

Anymouse appears to be suffering an anxiety reaction induced by incomplete dissemination of information.

An ejection at high speed and high altitude utilizing the Navy's automatic seat belt and parachute release will be far safer than one in which the pilot has to perform these actions manually. The seat-belt release is equipped with a 3/4-second delay.

High speed sled tests have shown that a 3/4-second delay in seat separation is sufficient to allow the pilot to clear the aircraft, approach the peak of his trajectory, and decelerate to a speed approaching his terminal velocity. Terminal velocity of the seat plus the pilot is much greater than that of the pilot alone because the seat represents a great increase in weight and a small increase in area. The stabilizing effect of the seat is possibly more negative than positive. The seat is designed and balanced for ejection forces, not for free fall, and tumbling prior to seat separation is to be expected.

The automatic-opening seat belt is designed for one purpose; to automatically insure, with maximum positive action, the separation of the ejection seat from the pilot, at the right time — not too soon, not too late. It utilizes the minimum amount of moving parts in doing so.

The automatic-opening belt is not affected by hypoxia, lapse of memory, blackout, cold or fear. It is installed for one purpose; to automatically free the pilot from the ejection seat when he has no further use for the seat.

During the period of maximum windblast the parachute will be protected by the seat or face curtain against inadvertent opening. If a seat pack is being used, it is well compressed in the seat pan at this time. If a back type pack is being used it will be protected by the face curtain until release of the curtain or the seat. However, don't attempt to hold the face curtain after the seat belt has fired. It won't do you any good and may foul in the chute.

Headmouse is not aware of any inadvertent parachute openings following use of the standard Navy ejection equipment and this has included several ejections using the automatic seat belt release at speeds up to mach 0.95.

Once the seat is detached, the barometric, aneroid-type parachute is actuated automatically.

If the pilot is below the pre-set altitude, usually 12,000 feet, another 2 seconds will be allowed for deceleration prior to automatic parachute deployment.

If the pilot ejected above the pre-set altitude the parachute is not opened until 2 seconds after passing through this altitude.

In case the device doesn't work, a manual override is provided. This resembles the standard parachute release ring and ripcord with which you are familiar. The seat belt may also be operated manually, but one word of caution! If the belt is released manually the automatic parachute opener is not actuated and also must be operated manually.

So you see, Anymouse, your fears are ungrounded. Headmouse is looking out for you on this one. Don't disconnect it! Use it as designed! You'll be so glad you did!

Ed's Note: Related problems of ejection were featured in **Approach** *— page 35 January, page 28 February, and page 36 March.*

Approach

ch

Flying the HOK-1

By
William R. Murray
Chief of Test Operations
The Kaman Aircraft Corporation

Murray, a U. S. Navy fighter pilot and instructor during World War II, was the first full time employee of Kaman Aircraft, joining the new organization in February, 1946, two months after its founding. Murray has logged approximately 5000 hours helicopter pilot time, the majority of which has been test and development flying.

Many Navy and Marine pilots have seen photos of the Kaman HOK-1 helicopter in print and will now be seeing this helicopter "in the flesh" as it joins the various squadrons of the Navy and Marine Corps.

The HOK-1 helicopter has been under development for the past three and one-half years and the final product is the brainchild of a tremendous engineering task. I attribute the fine qualities of the HOK solely to the quantity and quality of engineering that has gone into it.

Long before the helicopter took to the air, designs were made and changed on nearly every part. Tests were performed in the lab, on test rigs, and in wind tunnels. Static tests were conducted to verify the integrity of every part; and fatigue tests were run for weeks on end to establish the life of the major components. Mockups were made of the interior and lighting systems.

Following and sometimes simultaneously with the ground tests, the helicopter was put into flight where the months of engineering design had to show the proof of the pudding. The helicopter was subjected to very strenuous flight tests involving takeoffs, dives, climbs, rolls, pullouts, pushovers, and landings, with and without power. Stability, control, ground handling, and many other characteristics were investigated before the helicopter was considered ready for Navy acceptance.

The HOK-1 is called a syncropter type helicopter in that it has side-by-side counter-rotating rotors. These are controlled by servoflaps located at approximately 75 percent of the radius on each blade. A tail rotor is not necessary as directional control is achieved by use of differential torque between two rotors. Three tail fins located on twin booms and a controllable horizontal surface provide the forward flight stability no longer considered just desirable but necessary.

Please turn page

The HOK-1 can also be used as an ambulance, carrying two litters on the left side and a seat behind the pilot for a medical attendant.

The cabin has two seats forward, side by side, for the pilot and copilot and two passenger seats, one behind each pilot seat. The HOK-1 can be used also as an ambulance.

The pilot sits on the right side, copilot on the left. The instruments are located between the seats on an inclined console containing cabin heat controls, radio controls, light switches, engine switches, trim controls and temperature gages. The flight instruments are in a vertical panel mounted at the forward end of the console.

The rotor brake is located overhead on the canopy between the pilot and copilot. There are individual rudder pedal adjusting controls for the pilot and copilot located between the rudder pedals. All controls and instruments are located to be as accessible to the pilots as possible.

Starting is easily accomplished with the P&WA R-1340 engine and the starter button located on the end of the collective stick provides easy accessibility. After starting, the engine should be idled between 800 rpm and 1000 rpm until all engine pressure and temperatures are ready for higher RPM warmup. The rotors may drag over slowly while in idle but can be stopped by applying the rotor brake.

A red blinking light located on the clutch control handle is a very handy warning against engaging the clutch while the rotor brake is on. The engine can be run up to any desired RPM for checking with the clutch disengaged. The clutch is engaged by pushing the clutch lever forward while under 1200 rpm (preferably between 1000 and 1200 rpm). The rotors will, within a few seconds, engage smoothly. Further warmup is usually done between 1700 rpm and 1800 rpm.

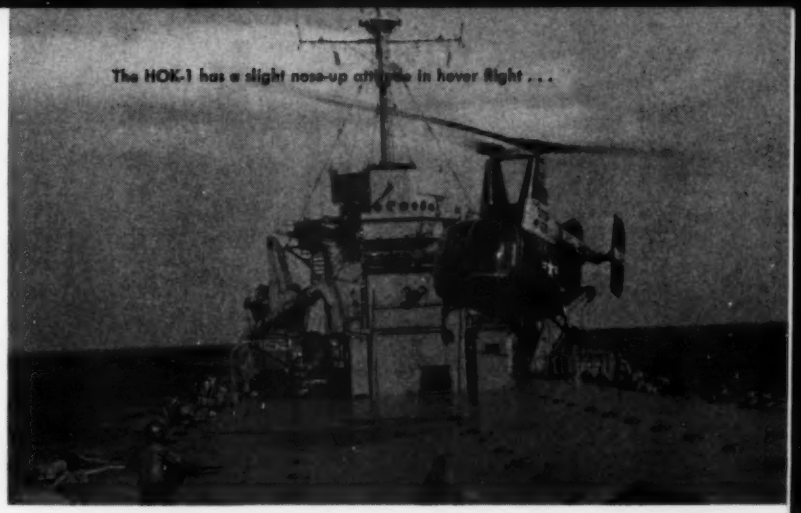
Taxiing is best accomplished by using an RPM between 2050 and 2200 on the engine. By adding a small amount of collective pitch (21" manifold pressure), greater control will be had. Although taxi turns can be done with rudder and cyclic control, toe brakes are supplied and taxi control is made much more precise by their use.

The transition from ground to hover flight is very simple. No torque corrections are necessary when adding power for takeoff and the inherent stability, coupled with the light control forces make it the most steady and most easily controlled helicopter to hover. The immediate response of the rotor to stick motion is another feature of the HOK-1 which is a great advantage for hovering maneuvers.

During hover turns in either direction, a slight roll into the turn is noted but is easily counteracted by use of the cyclic; 360-degree turns are accomplished in approximately 6 seconds. The turning speed is reached by a gradual buildup if full rudder is held in for more than one complete turn. The collective pitch is very effective also. The response is immediate, yet it will hover without requiring excessive hunting by the pilot, allowing almost complete freedom of the left hand. Friction adjustments controlled by the pilot are available on the cyclic, collective, and throttle controls.

Artificial feel is built into the cyclic control system in both lateral and longitudinal direction to avail the pilot with a pressure gradient when the cyclic is moved from the trim position. Trim controls are installed on the console close to the collective pitch stick within easy reach of the pilot's left hand. A slight fingertip control is all that is required to trim the helicopter to zero stick force for any given speed including hover flight.

The HOK-1 has a slight



The HOK-1 has a slight nose-up attitude in hover flight . . .

nose-up attitude in hover flight similar to the ground attitude. This is due to the forward tilt built into the rotor drive shafts to eliminate the nose-down attitude common in helicopters in forward flight.

Following entry into forward flight translational lift is encountered at approximately 12 knots. Between 25 and 30 knots the helicopter becomes even more stable. The vertical and horizontal tail surfaces take hold at this point providing aerodynamic stability similar to fixed wing aircraft.

The HOK begins to feel like a fixed wing aircraft and that is exactly how it should be flown. Roll the cyclic trim tab slightly forward as speed increases to relieve the stick pressure and at any desired cruise or climb speed, the helicopter will fly itself. The HOK-1 is capable of hands-off flying in smooth air but some rolling motion is experienced in rough or bumpy conditions. These characteristics take most of the effort out of flying the HOK, reducing pilot fatigue during extended flight.

To execute a slow turn, very little cyclic control is required as the application of rudder pedal automatically tends to roll the helicopter into the turn. During tighter turns, however, more lateral cyclic is required at the start, but once the desired angle of bank is reached the cyclic is returned to approximately neutral.

It is necessary to maintain rudder pedal throughout the turn to maintain coordination. The control response has that desired characteristic that when control is applied the helicopter responds immediately. Application of rudder pedal will cause a yaw and when it is returned to neutral the helicopter will return to straight and level. These same qualities are true also in pitch or roll.

The transition from powered flight to autorotation is not difficult but requires some mention.

It is not necessary to jam the cyclic control forward, as is common in many helicopter types, following the power loss. Such a practice would cause a greater loss of rotor RPM. The nose will drop automatically actually requiring a slight rearward motion on the cyclic. This action tends to reduce the rotor drop-off and allows the pilot to maintain control without any severe attitude changes. The collective stick should be lowered to the full down position quickly to minimize rotor RPM loss but not slammed down as more precise control of the helicopter can be maintained if handled more gently.

Turns can be executed by application of rudder and cyclic control similar to powered flight. Caution should be executed while in autorotation not to allow large skid angles as the stability in autorotation is somewhat less than in powered flight, thus requiring more pilot attention during this phase of flight.

Landings are usually made by applying rear cyclic to execute a flare, thereby reducing the forward speed and building up rotor RPM. The collective is then used to cushion the landing. Caution is again required against holding the helicopter in a taildown position long enough to cause ground contact by the vertical tail surfaces. Although no loss of control will occur should contact be made, such contact may damage the tail structure. Also, large, abrupt aft cyclic control motion can sometimes result in the rotor hitting the flapping stop which can be felt by the pilot. Smooth control motions during maneuvers will eliminate this condition.

This article is not intended as a complete guide to flying the HOK-1 but only to acquaint the readers with some of the handling qualities and flying characteristics. ●

Truth and Consequences

A DIGEST OF SIGNIFICANT AIRCRAFT ACCIDENTS

VA AD

COMPLETELY LOST — After a 30-minute FCLP period at an outlying field, an AD-6 was released by the LSO and the pilot departed for his home base 50 miles to the west.

Due to a local overcast and a range of mountains across his course, the pilot climbed on an easterly heading, got on top and reversed course to the west. Unexpectedly, his ADF became inoperative though the range receiver continued to function. When the pilot became unsure of his position, the range receiver was of little use as he failed to use any positive orientation procedures.

After flying on top for 10 minutes he let down to 2000 feet in the clear and then was forced down to 1000 feet in order to stay below another bank of clouds. After a short period of attempted VFR orientation the pilot was completely lost.

Down to 1400 pounds of fuel, he saw a small airport below him and decided to land. Painted in large yellow letters on top of the adminstration building was the name of the nearest town, including distance and directional information. Two major fields were located within 20 miles of the small airport.

The pilot set up a modified FCLP approach to the 3600-foot runway but the AD settled, struck the ground short of the runway and ballooned slightly, then touched down on the strip. As the aircraft slowed, the left landing gear collapsed and it groundlooped with resulting substantial damage. A naval reserve pilot witnessed the accident and stated the wind was light and variable at the time of the landing.

During the investigation it was brought out that: (a) the pilot had five hours sleep the night before the accident, (b) he had eaten only a light supper the night before and no breakfast on the morning of his flight, (c) he had attended all squadron lectures regarding lost plane procedure and emergency equipment available, (d) he had completed a two-week instrument course two days prior to the accident.

Radio reception was normal in the area but the facilities available (IFF, UHF/DF, GCI) were not used. The pilot

had all range plates for local range stations on his knee pad and the map case contained RaFac charts and a sectional chart of the area, which was not utilized.

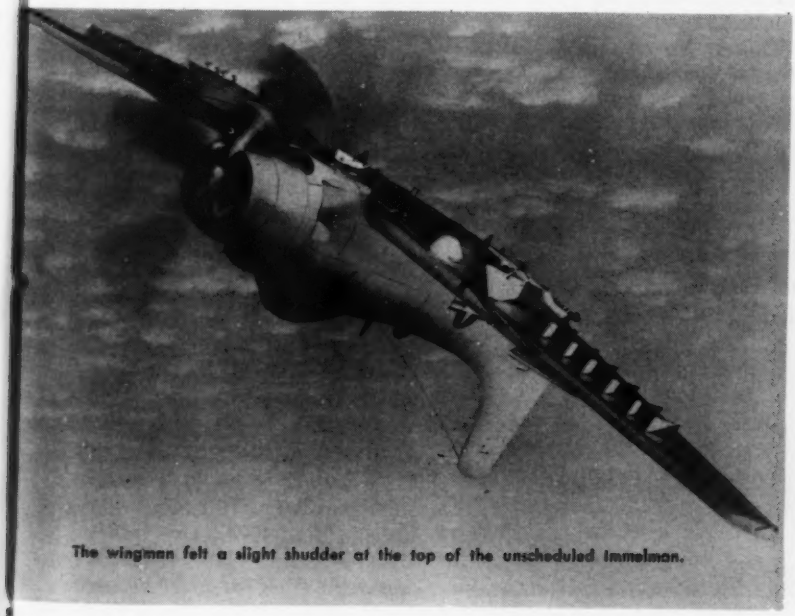
VA AD

MIDAIR IMMELMANN — The flight leader had briefed the wingman that their section of ADs would engage in individual aircraft aerobatics. As the flight progressed, the lead was passed to the wingman to allow him to do his solo aerobatics.

After several maneuvers, the wingman commenced an Immelmann turn. He noticed the flight leader's aircraft to his right rear, approximately 300 feet distant. The wingman continued his Immelmann and at the top of the maneuver, felt his plane shudder in what he believed to be an approaching stall. He successfully rolled to an upright wings-level position, at which time he observed the flight leader's aircraft fall past in a spin.

The wingman then observed damage to his left wing and realized there had been a midair collision.

Squadron policy prohibited formation aerobatics, except for wingovers and aileron rolls, which required preflight briefing before execution. The flight leader violated this policy, attempted to follow the wingman through the Immelmann, caused the midair collision that resulted in his death.



The wingman felt a slight shudder at the top of the unscheduled Immelman.

VT TV-2

SCRAPE-AND-GO LANDING— During a local jet indoctrination flight, the instructor pilot of a TV-2 was cleared for a full-stop landing. Following a normal break, the pilot began a modified approach to simulate that of an F9F-6. On base, and intent on his instruction comment which he made by manually shifting from UHF to ICS, the pilot called "turning base wheels down, locked and checked," and was cleared by the tower.

Because of the TV's nose-down, steeply banked attitude as it simulated a *Cougar* approach, the runway duty officer and wheel watch were unable to establish that the gear was not down until the airplane was on short final. Because of the excess speed of the approach, the pilot had throttled back to idle early in the final, and when the wave-off flare and light were observed, full throttle failed to accelerate the engine in time to prevent a wheels-up touchdown. However, 100 percent power became available as the plane settled onto the runway and provided enough thrust to overcome the drag produced by flaps. The tiptank and fuselage scraped the runway.

The plane slid for about 300 feet in a cloud of dust and the determined pilot succeeded in becoming airborne again. Climbing out to 11,000 feet he tested the airplane and had it visually checked by another aircraft. He then made an uneventful landing, this time with wheels and to a full stop. The de-briefing of the pilot under instruction is not recorded. The TV suffered class B damage in the form of neatly scalloped flaps, scraped underbelly and tiptank.

More briefs next page

Truth and Consequences

Continued

VF F9F-7

MUSH OFF—On an August afternoon three F9F-7 aircraft were preparing to make a formation takeoff from an airfield near Albuquerque. Airport elevation was 5352 feet with the temperature at 92°. Wind was reported as three knots. Distance required for takeoff was computed at 8000 feet with 13,774 feet of runway available.

At full throttle the formation leader released brakes and began rolling. He raised the nosewheel at 120 knots and the plane became airborne at 130 knots indicated. At that point about 12,500 feet of runway had been used and both wingmen had cleared the deck, passing ahead of the formation leader.

The formation leader's airspeed accelerated to 135 knots and he just cleared a 35-foot high power line one mile from the end of the runway. He had called that he could not gain altitude or airspeed.

About two minutes after takeoff the aircraft contacted the ground in a level altitude about six miles south east of the airport. Terrain in that area was generally level and the point of impact was approximately 220 feet higher than the runway. The aircraft slid to a stop after 1250 feet of travel with no injury to the pilot.

In analyzing the accident it was considered that the decision to attempt a formation takeoff under the existing conditions was unsound; that the pilot raised the nose of the aircraft too high during the initial stage of the climbout. The excessive angle of attack increased the drag to such an extent that the aircraft was unable to accelerate or gain altitude.

The accident board noted that the F9F-7s' takeoff performance is extremely critical and that exacting pilot technique is required. This is particularly so during undesirable takeoff conditions.

Formation takeoffs look real sharp, but in "Mush Off" somebody goofed.

VR R4D-8

CG, CROSSWIND FACTORS—An R4D-8 nosed up on a landing in which a forward center of gravity and crosswind were factors. The pilots had precomputed the landing CG as 12 percent MAC, but due to errors between assumed and actual weights and load distribution, the landing condition was actually 10 percent MAC. This is the forward permissible limit for the aircraft; the aft limit being 37 percent.

Combined with this CG situation, the landing was made on a runway 45 percent out of a 20-knot wind, with gusts to 28 knots. An uneventful landing using three-quarters flaps was made, and on the rollout, brakes were used to maintain directional control. The aircraft was in a tail-high attitude and when slowed to 80-85 knots, began to nose over.

CAA Approved Flight Manual, Douglas Aircraft Corporation, for the R4D-8 recommends that the flaps be raised on contact and that the upwind throttle be used for directional control. Retracting the flaps will make the airplane less affected by horizontal wind gusts. The use of brakes has a tendency to raise the tail.

An enclosure to this AAR was a very handy crosswind headwind component chart produced by Douglas Aircraft Corporation. Anyone desiring a copy, drop a post card to NASC. This will work for any type aircraft.—Ed.

VA A3D

NEAR MISS—Following a GCA PPI an A3D pilot landed fast on a wet runway and almost made it. However, he failed to raise his flaps to give better braking action and believed he was getting ineffective braking from the hytrol brake system.

He then cut both engines, thereby losing nosewheel steering, and turned on the emergency hydraulic pump for alternate source of pressure. Still believing he had no brakes he had the copilot pull the emergency brake air bottle.

After about 7500 feet of roll the A3D angled off the runway into mud, stopping after 100 feet of very messy travel. Inspection showed all systems operating normally and no damage from the accident.

A hot touchdown on a wet runway will never give the feeling of normal dry braking action.

VU JD-1

INCOMPLETE CHECKOFF—INCOMPLETE TAKEOFF—Preparing to take off in a JD-1, the pilot conducted the engine turnup and went over the checkoff list himself, with the list being held by the plane captain to make visual sighting easier. The normal challenge and reply system, wherein the plane captain would read off each item and the pilot would reply with the proper answer, was not used.

Shortly after commencing takeoff, one engine began to backfire considerably, but there appeared to be no apparent loss of power and decision to abort the takeoff was delayed until a manifold pressure fluctuation was noted. At the time brakes were applied, 1600 feet or runway remained. The plane swerved off the runway some 400 feet from the end, crossed a 400-foot wide dirt area to topple over a 48-foot cliff, coming to rest in 12-15 feet of water. Pilot and plane captain abandoned the aircraft.

In the course of the accident investigation, members of the board inspected the submerged airplane using shallow water diving gear, and established that *carburetor mixture controls were set in the AUTO-LEAN* position, and the *engine blower control was set in HIGH blower.* Thorough inspection after removal of the airplane from the water revealed no other discrepancies which might have caused a loss of power on takeoff.

The board cited two errors: (1) Error in pilot technique in improper use of the checkoff list, and (2) Error in judgment in pilot's decision to abort with insufficient runway, after which there were attempted no measures such as groundlooping, use of emergency air bottle for braking or retraction of wheels.

HU HUP-2

GRIM REMINDER — The pilot took off in a HUP-2 on a routine familiarization flight. He had been a helicopter pilot for 3 years and had 218 helicopter hours, of which 77 were in the HUP. It was his 11th year as a naval aviator. With him was a crewman observer riding the copilot's seat.

The flight proceeded to a civilian field where air reserve training facilities and a new runway were under construction. A set of power lines crossed this uncompleted runway near the middle. The power lines were about 35 feet high and were due to be removed prior to commissioning the runway.

Workmen first saw the HUP hovering near a new ramp area, then it picked up speed and altitude to 75 feet and flew along one edge of the partially completed runway. Reaching the end of the runway, the pilot reversed course and flew down the opposite side at an altitude of about 30 feet.

His airspeed was estimated to be 60 knots when he struck the power lines. Upon contact the HUP slowed to almost half its original speed, snapped the wires, then hit the ground in a nose-down, left-bank attitude. The rotors disintegrated and the aircraft began to burn. There was no explosion and the construction workers removed the bodies of the pilot and his passenger before fire reached them.

Witnesses stated that no noticeable attempt was made to avoid the lines.

The accident board recommended the accident be given wide publicity to remind all helicopter pilots of the necessity for keen vigilance due to the extra hazards present in helicopter flying. ●

A Thing Called

Author of "A Thing Called RAPPORT" is Comdr. Carl E. Wilbur, MC, USN, currently assigned to the Aviation Safety Division, Op-57, Chief of Naval Operations, with duties as liaison officer with the Bureau of Medicine and Surgery.

A flight surgeon, searching for additional ways to improve his local program, writes in part: "Have you any good ideas about the promotion of aviation safety by the flight surgeon in the field?"

One mighty fine answer to this query is found in a word of French origin: "rapport"—rapport between the flight surgeon and the squadron commanding officer; rapport between the flight surgeon and the exec, the operations officer, the safety officer; rapport between the flight surgeon and *every aviator* in his squadron.

The word may be French and most commonly used in medical lingo—but the meaning is clear: *having a close understanding or working in mutual dependence.* The women's pages may refer to it as togetherness.

There is no magic formula for safety, no substitute for command responsibility, adequate training, thorough preflight planning, careful maintenance, and all the other ingredients which make for accident-free flight hours; but there is one ingredient without which none of these is completely effective—that ingredient is *rapport.* Each and every member of an aviation unit must work together in a spirit of "mutual dependence" and "close understanding."

The commanding officer and the aviation mechanic are mutually dependent on one another. The aerologist rides with every pilot aloft. The operations officer and the most junior flier in the squadron work in an atmosphere of close understanding. The plane captain, taxi director, landing signal officer . . . the list is long and all-inclusive—every member of the aeronautical organization lives and works as a team; either they figuratively hang together or literally they hang apart—each from a different yardarm.

Just two examples from a foot-high stack of recent Medical Officers' Reports will emphasize the squadron's *operational dependence* on the flight surgeon. We take for granted that the medical officer is the

RAPPORT

man to call when we have a broken leg. Who needs a "close understanding" with the doc when we are seemingly well and sound of limb? Let's look and see:

F9F-5: On routine flight and landing pilot dropped flaps and failed to lower gear . . . Injury: none, Damage: major. The flight surgeon reports "Wheels-up landing occurred at 1917; pilot had been on duty since 0730; this was his third hop of the day; had sweet roll and milk for lunch, nothing for supper; contributing factors in this accident are insufficient nutrition and inadequate rest prior to flight."

AD-5N: On his first pass he failed to go through his landing checklist completely and landed wheels-up . . . Injury: minor, Damage: major. The flight surgeon reports: "the pilot had no sleep the night before the flight; he slept only 4.5 hours from 0930 to 1400 on the day of the flight; the inadequate physical rest and nervous tensions involved in the previous night's squadron duty contributed largely to the cause of this accident; the pilot's wife was at term in her first pregnancy — this may have occupied some of his subconscious thoughts before and during the flight."

These two pilots and their flight surgeons could not have enjoyed a "close understanding." Or perhaps it was the operations officer who failed to realize that the success of his scheduling was "mutually dependent" on the flight surgeon as well as the pilots.

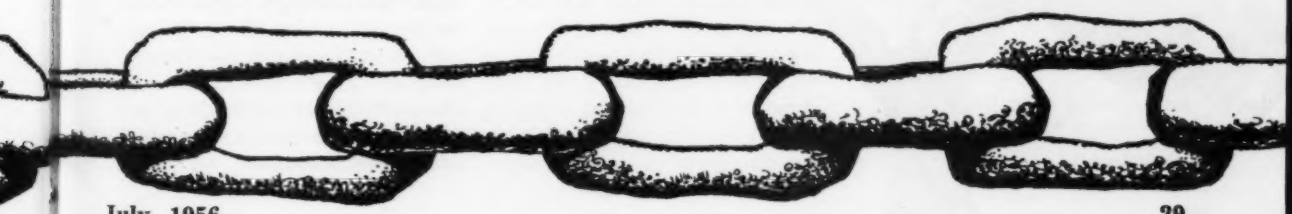
Now we recognize that the flight surgeon is not expected to spoon-feed the pilots and tuck them into bed—nor is the maintenance officer expected to check every turn of the pliers made by his mechanics.

The point is this: the flight surgeon *gives the word* on such things as adequate rest and nourishment. If he has *rapport* with his pilots, they *get the word* and accidents like the foregoing don't happen.

We know that one of the best ways for the flight surgeon to establish rapport with his pilots is by constant association, by working and relaxing together—in the ready-room, at meal time, in the wardroom, and at O-Club musters. In all of these places he can keep his finger on the pulse of the squadron.

If the flight surgeon is up at the dispensary, perhaps assisting the entry of that AD pilot's baby into the world, the squadron should not forget its *operational dependence* on the surgeon and his duties toward the pilots. When the doctor is busy with dependents or routine sick call, the older heads in the squadron must be alert to the physical and mental status of the younger pilots. A grounding chit from sickbay is easier to come by than an Aircraft Accident Report.

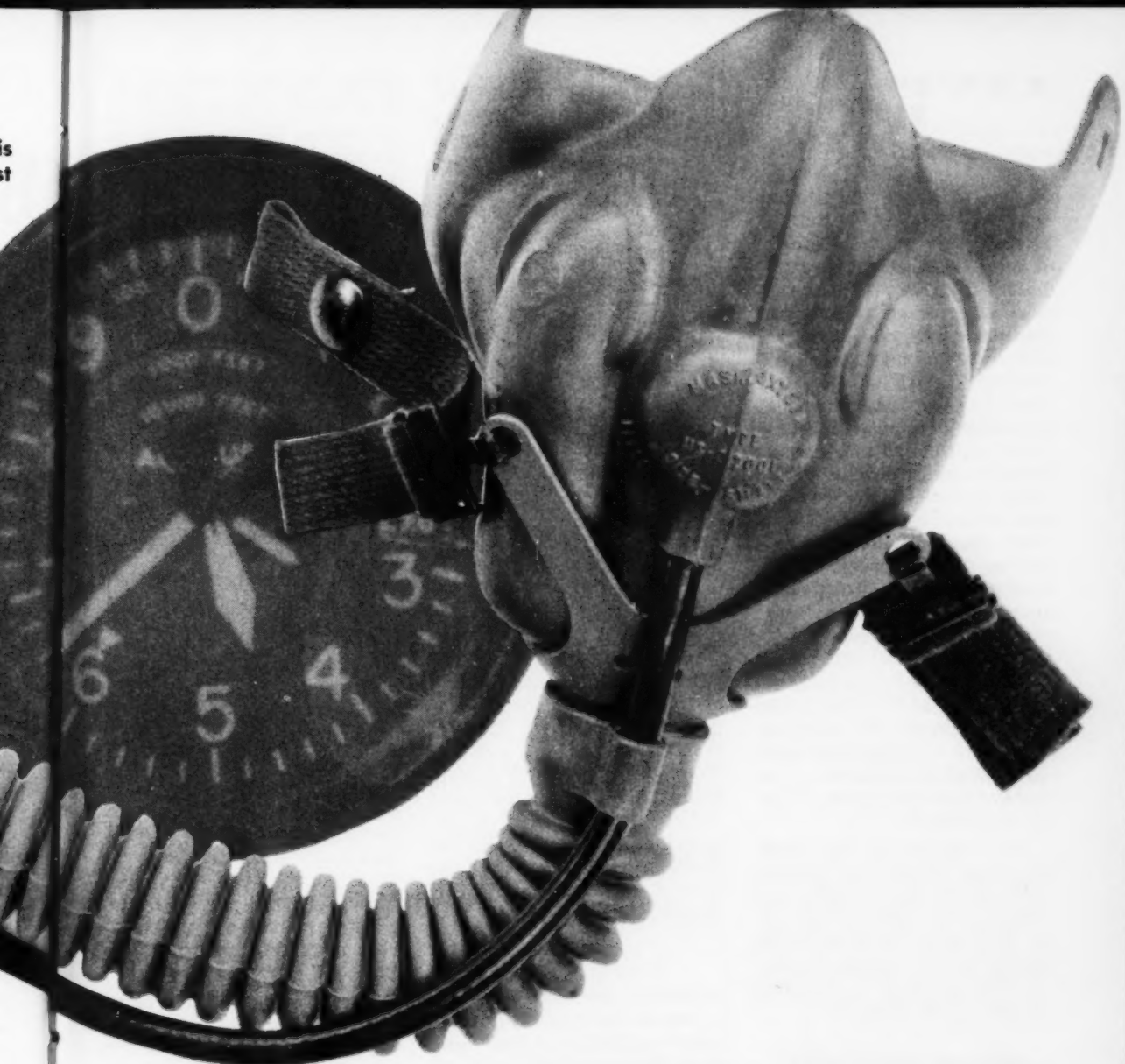
The answer to aeromedical supervision of flight personnel is not necessarily more flight surgeons. The fix can often boil down to more *rapport*— among all members of the squadron.



High altitude troubles are still with us, hence this review offering additional info on how to best

'Live it up!'

Much of today's aviation news concerns the highly impressive speeds, altitudes and other performance features of tomorrow's aircraft. Such accounts make frequent reference to things like mach 1.5 plus, 50,000 feet altitude plus, ejection capsules and omni-environment suits.



In fact, pilots, aircrewmen and those responsible for the care and maintenance of aircraft and equipment may sometimes feel this interest in tomorrow's potential tends to overlook the very real and immediate problems of *today's* flight operations.

Not so. Just a quick look at the amount of dispatch traffic and performance reports, together with a glance at the numerous research and development projects continuously in progress, should convince that the Navy's concern over present equipment is encouragingly constant.

Have a look, then, at an informal progress report on some aspects of today's flight operations problems—subjects which are as timely and as near to most of our readers as the cockpit in the next flight.

We might first have a look at this matter of decompres-

Please turn page

LIVE IT UP!

Continued

sion, which poses a mental problem at least for many pilots. The Safety Center reports no cases of rapid or explosive decompression in the U.S. Navy at altitudes in excess of 45,000 feet. The only pilot to report the effects of explosive decompression at a lower altitude stated that his cockpit pressurization dump valve failed. As he released the canopy, he suffered a severe earache which lessened during parachute descent and disappeared by the following morning.

This pilot actuated his parachute at about 32,000 feet and estimated it was fully deployed by 30,000 feet. The opening shock was very severe since a normal parachute opening at this altitude would involve G-forces in the vicinity of 18-20-G.

By comparison, the most desirable parachute opening altitude of 5000-10,000 feet subjects the survivor to 7-8-G. Six other ejections above 30,000 feet at speeds as great as 565 knots have resulted in only minor injuries.

Ejections and Helmets

Of equal interest is a recap of the effectiveness of helmets during ejections. There have been no ejections or parachute openings above 45,000 feet. The highest altitude at which a naval aviator has accomplished an emergency ejection is 36,100 feet.

Approximately 66 percent of the 139 pilots who were wearing H-3 or H-4 type protective helmets at the time of ejection retained the helmet, liner and mask. Eleven cases are unknown, and four intentionally discarded their helmets prior to ejection. There are few, if any, cases in which the liner has been retained and the mask lost.

Hypoxia

Concerning the long familiar subject of hypoxia, exact figures are not known on the number of cases of hypoxia resulting from separation of the oxygen mask quick-disconnect feature. There appear to be about 10 known, reported cases, mostly in the form of Anymouse Reports. The possibility that some unexplained accidents resulted from failure of this fitting cannot and has not been overlooked. The Bureau of Aeronautics and the Aeronautical Medical Equipment Laboratory have devoted considerable effort to development of an alarm or warning device, other than the blinker, to warn pilots of this danger.

Old Masks

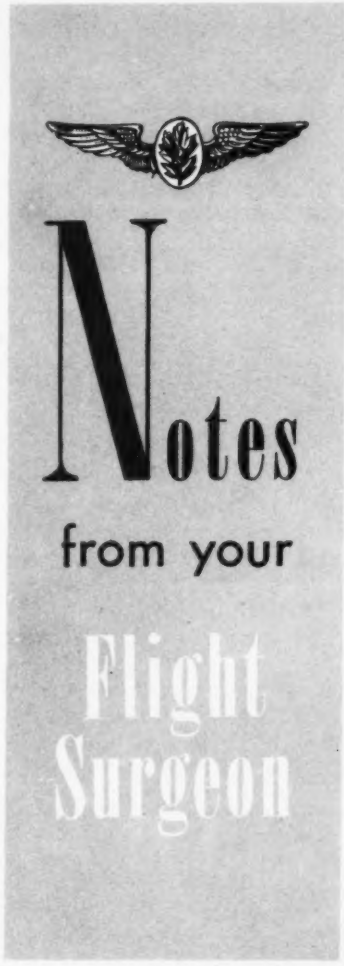
Perhaps not so generally known is the consideration of mask reliability versus age. No attempts have been made to correlate mask failures with age of the mask, because most masks now being issued have been overhauled by an O & R activity at least one or more times prior to issue. Oxygen mask failures are rarely reported to the Aviation Safety Center except as Anymouse Reports. It is expected that the new FUR reporting system, and the newly adopted policy of molding in the masks the date of manufacture will provide more information in this field.

The Bureau of Aeronautics is aware of the need for certain limitations on shelf life and service life of oxygen masks and such a study is now in progress, but no recommendations have been published to date. Maintenance, quite obviously, is more a vital factor than age.

It is known that oxygen mask maintenance is often neglected. Following a recent fatal accident resulting from hypoxia it was discovered that over 25 percent of the masks in use at one large air station would not pass a standard preflight check as outlined in ACSEB 7-54. This was a reserve station and the problem is considered to be more acute in the reserve program. However, it is an indication of the lack of understanding by many naval aviators of the basic physiological requirements which lead to the development of the pilot's personal equipment.

Two studies are now being conducted by the Naval Aviation Safety Center relative to oxygen requirements, usage and problems in the fleet. Questionnaires have been distributed to many units and most have been returned. Upon completion of these studies the results will be published in this magazine. ●

The correct reading of the altimeter shown on the inside front cover, and page 31, is 34,640 feet.



MORE FLICKER VERTIGO

Last May's *Approach* featured "Light Fantastic," a discussion of flicker vertigo. Since preparation of that article, additional incidents have come to light on the same subject.

It is noted that the Germans used a variation of flicker vertigo in WW II. Outside sources of light, other than sunlight may produce a sickening effect. German searchlights were deliberately arranged to flicker in order to irritate attacking pilots, the worst frequency for this searchlight flicker has been found to be between 4 and 12 cycles per second. A distinct effort of will is required to continue looking toward them as the flicker can cause sickness.

Investigation of a recent tragic accident according to the *Beech Service News* revealed that flicker vertigo from dual rotating beacons on the aircraft reflecting in the overcast was a contributing factor. . . . Turn off your rotary beacons before entering overcast.

Also, in a recent Flight Safety Foundation *Bulletin*, the following incident was reported by a Holland physician. "After flying for some time at an altitude of 16,400 feet, a pilot in a single-seater propeller aircraft made a perfect landing. However, he did not taxi the plane to the hangar. Instead, the plane remained motionless, its propeller revolving slowly. The pilot was found bent over the controls, unconscious.

"At first it looked as though the pilot had not used his oxygen mask. However, in this case, the pilot had lapsed into unconsciousness after making a good landing.

"The rays of the low-lying sun were shining on the slowly-turning propeller blades. Reflected flashes of light were being thrown on the pilot's face at a rhythmic rate of about 12 per second."

Light flashes can have an influence on sensitive individuals, especially under conditions of hypoxia (or oxygen want). This can be overcome by shielding the eyes or changing propeller RPM.

BENEFICIAL SUGGESTIONS FOR MEDICS

One Air Force flight surgeon's office uses the following questionnaire to obtain additional information and ideas:

In reporting for this physical we would appreciate a helping hand in advising us in ways that we could possibly help you. Please make any suggestions which you feel are constructively critical on the following topics:

Flight surgeon's office and personnel.

Subjects you feel are worth discussing at meetings. a. Flying safety; b. Physiological training; c. Personal equipment; d. General bull sessions.

Gripes about flying: a. Crew rest; b. In-flight lunches; c. Personal equipment; d. Other.

General Comments.

It would help us if you sign this but we'd rather have the suggestions and no signature than vice versa.

—Office of the Surgeon,
Hdq 8th AFB, Mass.

SAVED BY THE KNIFE

Following a mirror approach for an angle-deck landing the number 5 wire was engaged. The tailhook broke off and the pilot's effort to regain flying speed failed. He went into the water. The F9F-8 did not sink immediately.

But the emergency canopy release would not operate and the pilot was trapped inside, with the helicopter hovering overhead.

The tail was rising and the plane settling dangerously when the pilot knocked a hole in the side of the canopy with his hunting knife, and was rescued.

An oily deck helped the AJ-2 into the catwalk . . .

There was the qualified crew; the plane director, the tractor driver, a chock man at each side to chock the wheels, the plane captain walking along the starboard gear, the second mech manning the brakes and the mechanic manning the AJ's battery to give power to the brakes; everything done according to the book, yet the AJ-2 dropped into the catwalk!

Although several factors contributed to the accident, including a 42-knot wind over deck, least considered before the accident was the spilling of several gallons of hydrolube in the area causing a slippery deck. The area had been swabbed but not washed down. It put the skids under the tractor to begin the ill-fated series of events which were so rapidly climaxed.

In another case an F9F-6, with cockpit manned by the plane captain, was being respotted in the hangar bay. The ship, in turning, heeled to such an extent that the aircraft slid athwartships three feet with the brakes locked. It struck the ship's structure. The accident was caused by the high angle heel of the ship while moving the aircraft over slippery portions of the deck.

Commenting on accidents of this type ComAirPac said recently, "It is recognized that the

tempo of carrier operation requires speedy handling of embarked aircraft. However, the small gains made in overhasty efforts pale into insignificance when compared to the immediate and appreciable loss of readiness resulting from a single ground accident. The urgency to have ready as many aircraft for flight as possible should be paralleled by an equal urgency to protect them from unnecessary damage . . . the following measures suggest themselves":

While handling aircraft, pass the word on the loudspeaker system whenever a high speed turn is to begin.

Require prompt tie-down of all aircraft and rolling stock as soon as spotted for parking . . .

Take all practicable methods to keep the hangar decks dry and free of water, oily and greasy compounds.

Not all accidents due to oil on deck occur aboard. Ashore, oil deteriorates the asphaltic portions of the deck, calling for frequent and costly resurfacing. Ground areas suffer the most, since an engine operating at high RPM normally throws off a certain amount of oil.

An example of what can happen is the report of an F3D which damaged its tail section with its own jet blast. During engine runup a section of the concrete parking ramp exploded and showered concrete particles up under the tail section. The portion of the concrete parking ramp that exploded was in a direct line with the engine exhaust. The concrete surface was heated sufficiently, and probably contained sufficient oil and other moisture to create pressures exceeding the limits of the material resulting in the forceful explosion.

The plane captain of an S2F-1 had started the port engine for the purpose of folding the wings after rocket de-arming. Upon starting, the port wheel and chock began to slide due to an oil spill in the parking spot. The aircraft pivoted causing its port wing to strike another aircraft. Both aircraft were damaged.

Even the big ones are susceptible to this hazard. An R5D was parked on a slightly inclined parking ramp. During the oiling operation the aircraft rolled backward over a small wooden chock pushing a large metal pipe chock aside. The R5D came to rest against a security fence which resulted in damage to the left elevator, tailskid fairing and bungee.

Cause of the accident was attributed to an oil covered ramp, and improper use of chocks; that is, fore and aft chocks were not tied together permitting chocks to slip.

Retrieved without further damage and after minor repairs the AJ-2 was flown off the ship a week later . . .

PICKUP PROBLEM

Put 50,000 pounds of airplane in this awkward position (see photos) and you have salvage problems. The ship's company of the USS *Lake Champlain* did it this way:

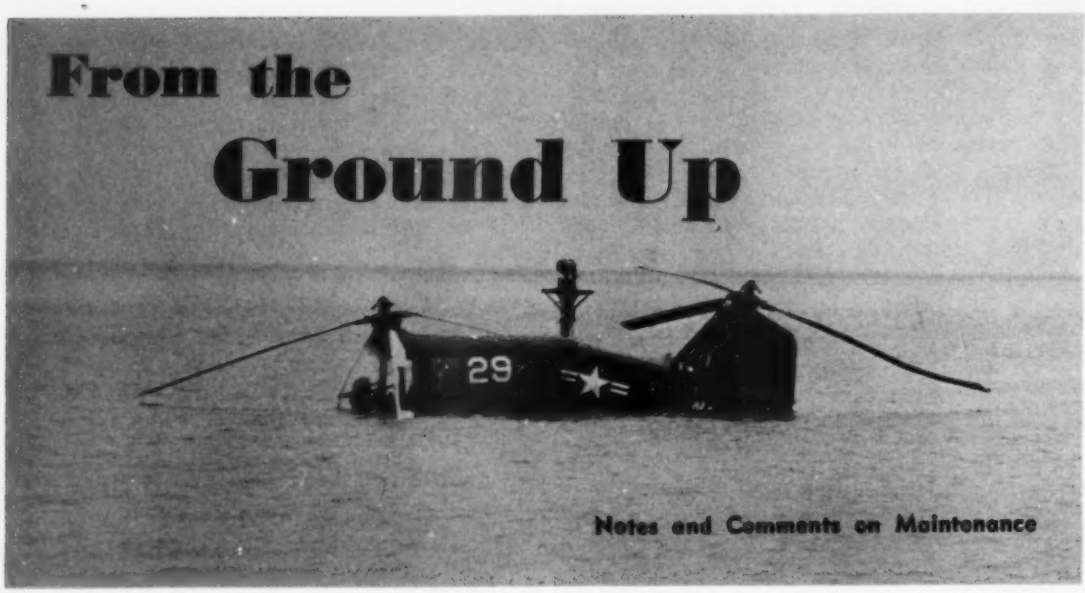
First, the AJ-2 was completely defueled. Then it was rotated about its lateral axis until the nosewheel rested on the deck. The landing gear and nosewheel oleos were deflated all around and this just brought the jackpad over the starboard catwalk.

After that the regular AJ wingjack was used under the starboard side. Shoring was used to build up the base for the gear and the jack. Finally the starboard main wheels rested on shoring and were flush with the deck.

The plane was then towed onto the deck. No damage sustained by the aircraft was attributed to the salvage operations.

Requiring only minor repairs when it was retrieved, the AJ tanker was flown off the ship a week after this accident.

From the Ground Up



The pilot discovered he had a complete loss of throttle control . . .

KEY NOTE—After about 20 minutes on a local VFR flight, the pilot of a HUP-2 discovered that he had a *complete loss* of throttle control. The pilot found that he could maintain 28 inches of manifold pressure and advised the tower that he would attempt to reach a nearby field.

During the flight to the field the pilot experienced difficulty in controlling RPM and keeping the helicopter airborne. While lining up with the runway for rollon landing, approximately 200 yards from the field, the pilot lost control of rotor and engine RPM.

As RPM started decreasing rapidly, he cut the mixture and depressed collective full down to go into an autorotation. The pilot was unable to build up rotor RPM again to regain control of the helicopter. Approximately 120 feet from the local field with a nose-high flare attitude, the helicopter struck the water. The pilot and passengers left the 'copter safely. The helicopter was a strike.

Investigation revealed that maintenance personnel failed to *cotter key* the throttle arm nut after installation of a new carburetor. Neglectful maintenance and inspection caused the loss of one HUP-2 worth $250,000. Closer post and preflight inspections by maintenance cannot be overemphasized.

ENGINE FAILURE AND FIRE—Immediately after takeoff and rendezvous, excessive black smoke poured out of engine. Returning to the field for an emergency landing, the engine ran roughly, oil pressure dropped and temperature went up. A half mile from the field, the engine failed. The pilot attempted to stretch his glide and stalled just inside the field boundary.

Fire broke out when the aircraft crashed. The pilot released his seat belt, shoulder harness and removed his parachute (quick release snaps on the harness), but neglected to remove the pararaft lanyard from his mae west. It pulled him back into the seat as he attempted to escape. On his second attempt to get out, he pulled the eyelet out of the mae west waist band, exerting 200 to 300 pounds of force to accomplish this feat.

He emerged from the flaming cockpit with his clothing on fire. However, the crash crew immediately smothered the flames. The pilot's hard hat, goggles in place over his eyes, gloves and high topped shoes protected his hands, feet and face.

The flight suit was old, had been washed and not treated with fire protection chemicals, therefore burned easily and did not give adequate protection to his body and he was severely burned! (BuAer Aviation Clothing

and Survival Equipment Bulletin 6-55 explains how to treat washed flight gear.)

The primary cause of the accident was material failure; broken articulated rods in the rear row of cylinders. But behind the material failure was personnel error—a previous case of hydraulic lock in No. 9 cylinder causing the rod to bend and set up metal fatigue with subsequent rod and piston failure after continued operation! General Engine Bulletin 79 emphasized the need to run the prop through on the starter before switching on the magnetos in order to eliminate and exhaust excessive oil and gasoline accumulation in the lower cylinders.

SHARP TEETH—Despite its years of service the F2H still has sharp teeth. In the last 15 months six men were sucked into the air intake ducts of *Banshees*. In the two most recent cases, one man was a fatality and one was injured seriously.

Now don't go blaming the man in the cockpit for these accidents; in each of these six cases the man in the cockpit didn't know anybody was near the intakes.

Familiarity with the aircraft makes it almost second nature, when intent on your work, to forget the old *Banshee* is still dangerous. You're also more inclined to get careless when working around jet intakes everyday. These factors add up to the cause for getting sucked in.

So, while working on the F2H, or any other jet aircraft for that matter, make it habit to first check to see if the air duct inlet screens are installed. Next, let the man in the cockpit know your intentions. And finally, if you are working under the wings (as most of these men were) to move outboard toward the wingtip before going forward.

HSS—HANDLE WITH CARE—An HSS on its first operational cruise sustained extensive damage when it was towed too abruptly. Its tail swung to starboard and into catwalk obstruction. The HSS has a full-swivel tailwheel.

Because this accident could well be repeated as the HSS comes into general use, flight deck personnel are cautioned to insure more clearance for this aircraft during maneuvering at close quarters.

TAILWHEEL OUT OF TRAIL — During a retraction test of AD landing gear on an acceptance check, the tailwheel damaged the tailhook supporting structure. The tailwheel lock control was in the LOCK position, but the tailwheel was 180 degress out of trail at the beginning of the landing gear-up cycle. The arm tail centering cam roller support caught on the tailwheel support fitting. This caused the tailwheel shock strut barrel assembly to rotate and catch the arresting hook supporting structure. Damage also resulted to airframe skin on both sides of the wheelwell.

T-28B LUBE SYSTEM — Recent reports indicate cate improper maintenance of the engine lubrication system. This situation has resulted in many premature engine removals, accidents and forced landings.

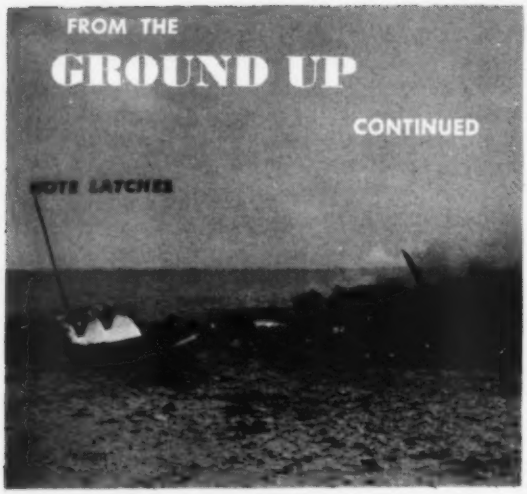
Here are some of the discrepancies and remedies:

Bearing Failures—Many of these are attributed to momentary oil starvation due to lack of pre-oiling. Engines that remain idle in excess of 72 hours should be pre-oiled (see the Handbook of Service Instructions).

Clogged Strainers and Excessively Sludged Engines—Technical Order No. 37–54 permits operating activities to establish oil change intervals to prevent excessive sludging if the latter decreases engine reliability. Engines equipped with disc type strainers should have the strainers cleaned thoroughly at each periodic maintenance inspection. This can be done only by disassembling the strainer and soaking in solvent (see the Handbook).

F3D-2 DOOR LOSSES CONTINUE — While a study of operating, maintenance and design problems involving F3D-2 wheelwell doors and lower escape doors is in progress, the need for rigid inspection and rigging procedure is emphasized by more in-flight losses of these doors. Four wheelwell doors and four lower escape doors were reported lost recently.

Although instructions for rigging of these doors are contained in the Maintenance Handbook, look for additional information concerning these problems in Douglas Service Bulletin 194, Aircraft Service Change 151, F3D Service Information Summary of September 1952 and January 1954.



Gun bay door was torn loose by in-flight forces . . .

TV AIRCRAFT GUN BAY DOORS—On reaching 260 knots at 16,000 feet altitude, the pilot observed a vibration of his starboard gun bay door between the full closed and the partial open position. The pilot was instructed to detach from flight and return to base.

He reduced power, dropped speedbrakes and commenced a shallow port turn towards the base, while still in the turn, the starboard gun bay door opened fully. The aircraft immediately entered a flat spin to port. After four unsuccessful attempts to recover, the pilot ejected successfully. The aircraft was demolished by impact and ensuing fire.

The gun bay door received a minimum of damage and the latches were found in the following condition:

Rear lever, PN 179175, and assembly, PN 459658R were missing. Rear plate assembly, PN 179169-3A was intact and undamaged.

Front latch was unlocked, but was capable of being locked. A 12-inch crack just aft of this lock indicates this part of the door was torn open by in-flight forces.

Prior to the crash the aircraft had been downed because the gun bay door came open in flight. The locking pin on the gun bay latch was replaced to correct the discrepancy.

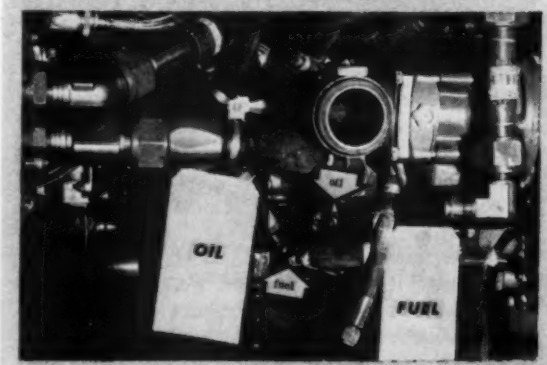
Pilots and maintenance men share the responsibility for proper preflight of aircraft. A TV-2 costs $132,000. Insure that *your* aircraft is properly "buttoned up."

MURPHY* INC.

*Murphy's Law:
If an aircraft part can be installed incorrectly, someone will install it that way.

A safety ampfur reported a Murphy wherein an F7U-3 on attempted ground runup, experienced vibration, overtemp and fire. After the fire was extinguished, fuel was observed to pour out the tailpipe upon actuation of the master switch.

Investigation revealed the hose assembly from the engine-driven fuel boost pump connected to the port



Like-sized oil and fuel line fittings contributed to this Murphy.

oil pump, and the hose assembly from oil pressure regulator connected to the air flow restrictor added by J-46 Engine Bulletin 53.

Due to this cross-connection fuel was introduced into the oil system through the port oil pump, resulting in damage to the main bearings, other parts and ejection of fuel into the engine from number 2 and 3 bearings.

This Murphy occurred during the incorporation of Engine Bulletin 53.

The reporting activity recommended that these hose assemblies be modified to have different size end fittings to prevent incorrect connection.

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WHIRLYBIRD AERODYNAMICISTS

For the serious minded helicopter pilot various technical publications can be purchased from these government sources: Office of Technical Services, and the Superintendent of Documents, Government Printing Office. Address of each, Washington 25, D. C.

From the Office of Technical Services there are publication titles enough to make any engineer's note book quiver; such as Stability and Control of Rotary wing aircraft, Mechanical Design and Description, and Aerodynamics and Performance of Helicopters (by A. Klemin and Igor Sikorsky). Prices and a complete list of titles are available from sources listed above.

SCOPE DOPE

During heavy precipitation ATC surveillance radars are not able to "see" due to clutter on the scope. Maintaining radar identification is extremely difficult.

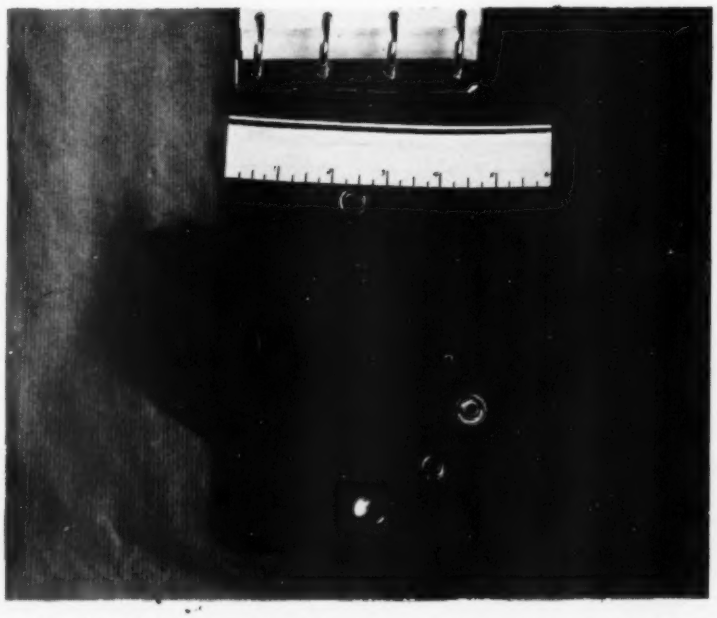
Awareness of this limitation will help to eliminate a false sense of security while being controlled with radar. While flying in areas of scattered or widespread precipitation it's a good idea to keep track of your position with available radio aids—just in case the controller loses you on his scope.

LETDOWN PLATE FIX

Anymouse related a situation in "Almost Had It," August *Approach*, where the rubber band holding his letdown plate to the kneepad broke and the chart fell to the cockpit deck. At the time he was in a procedure turn, outbound at 2500 feet. The rest of the article described a typical anymouse incident in which a pilot and an expensive airplane almost made the obituary column.

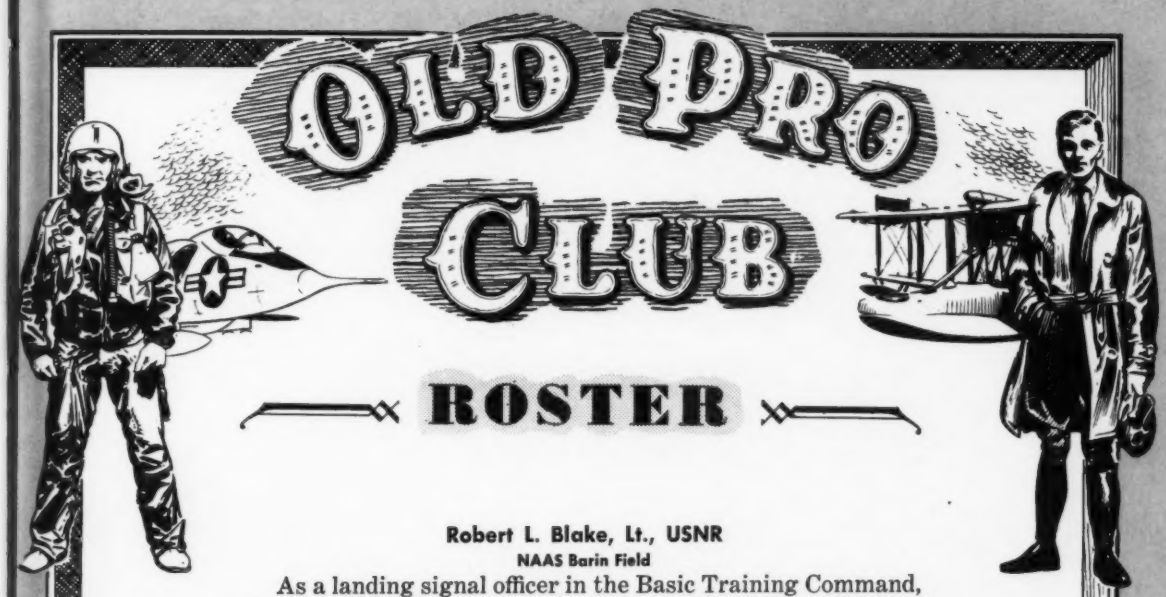
The problem of holding the jet approach plates on your knee in secure position has resulted in many makeshift remedies.

Ensign A. M. Grisham of FAWTU, Det B, at Moffett Field has come up with an idea which should appeal to all jet pilots. The photo illustrating his fix is almost self explanatory. All you need is a pleasant approach to the parachute rigger — he'll provide you with a length of strap, several snaps and the "can-do."



Thanks to AirPac who passed the picture and information on.—Ed.

The Goal is 3.0 in '56!



ROSTER

Robert L. Blake, Lt., USNR
NAAS Barin Field

As a landing signal officer in the Basic Training Command, Lieutenant Blake directed student naval aviators through 32,128 consecutive accident-free FCLP approaches.

Edward L. Feightner, Comdr., USN
Aircraft: F2H-4, VF-11

At the top of a bombing maneuver, the starboard engine of the *Banshee* exploded and fire broke out in the engine. Commander Feightner elected to make an immediate emergency landing at a nearby civilian air park which had 5000-foot runways. Although both tires were blown during the rollout, the aircraft was stopped on the runway, still on fire. Upon evacuating the aircraft, the pilot put out the fire using dirt from the side of the runway.

John M. Solomito, ADC (AP), USN
TV2, FAWTULANT

While performing a scheduled weather recon flight, Chief Solomito lost all radio transmitters. He was at 39,000 feet above a solid overcast in a high density area. Utilizing his IFF and the right-hand triangular (receiver only) pattern, he alerted a GCI station and received a letdown clearance. By shifting modes on the IFF, he was able to answer interrogations of the GCI controller and to make "position" reports. Still on instruments at 2500 feet, he was picked up by GCA and brought in to a successful landing, becoming contact at 400 feet.

Recognition of heads-up flying is essential to a positive program of flight safety. Each month, APPROACH will acknowledge certain selected individuals whose exhibited flying ability merits membership in the "Old Pro Club." Commanding officers are invited to submit nominations for selection.

TRADEMARK

of the best in naval aviation!

Competition for the 1957 awards is now underway.
Begin to win now!